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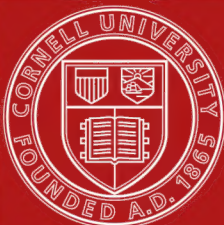
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Report of the Board of rapid transit rail



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WITH THE COMPLIMENTS OF

RAPID TRANS

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JOHN

WOODBURY LANGDON,

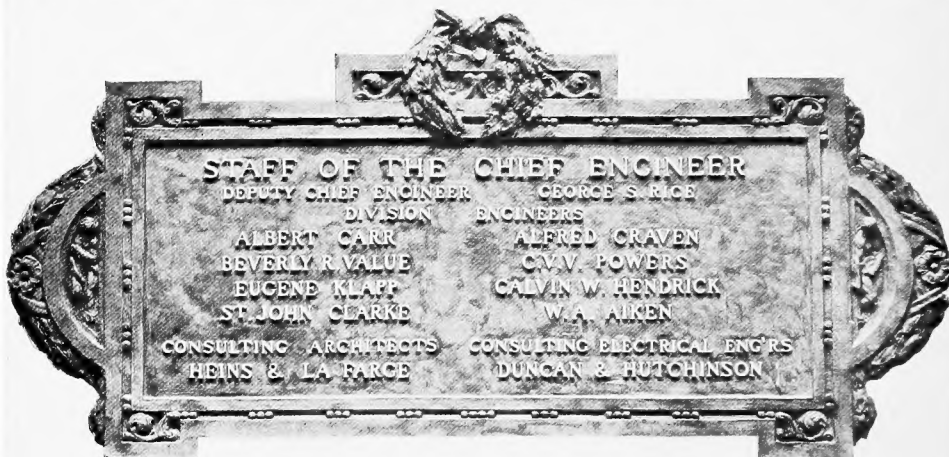
CHARLES STEWART SMITH

MORRIS K. JESUP,

GEORGE S. RICE,

Chief Engineer.

Secretary.



COMMEMORATIVE TABLETS, CITY HALL STATION.

REPORT
OF THE
BOARD OF
RAPID TRANSIT RAILROAD
COMMISSIONERS

FOR THE CITY OF NEW YORK

FOR THE

Year Ending December 31, 1904

ACCOMPANIED BY REPORTS

OF THE

CHIEF ENGINEER

AND OF THE

AUDITOR



NEW YORK

1905

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REPORT
OF THE
COMMISSIONERS
WITH APPENDICES

OFFICE OF THE
BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS,

*No. 320 Broadway, New York,
January 1, 1905.*

TO THE MAYOR OF THE CITY OF NEW YORK,

Sir:—The Board herewith transmits its report for the year 1904.

The only change in the personnel of the Board has been in the retirement of MR. LOW at the end of his term as Mayor and the succession of MR. McCLELLAN in his place. The Board has, however, to its regret sustained the loss of two of its most valued assistants. On January 27, MR. EDWARD M. SHEPARD, who had been for many years one of the counsel to the Board, tendered his resignation to take effect on the first of March. His action was due to other professional engagements and especially to a general retainer by the Pennsylvania Railroad Company.

On December 1, MR. WILLIAM BARCLAY PARSONS, who had been Chief Engineer of the Board for ten years and a half from the time of its organizing under the Act of 1894 and who had been for some years before that very actively engaged in the study of rapid transit problems in this city, presented his resignation to take effect at the close of the year. MR. PARSONS' resignation also was based upon his desire to accept other professional work and his feeling that the task upon which he had originally entered was now practically completed.

In connection with MR. PARSONS' work it is of interest to state that a model showing the construction of the Rapid Transit subway and one of its stations was prepared by MR. PARSONS, who

placed it at the disposition of the Commission for use at the St. Louis Exposition. This exhibit was awarded by the Superior Jury on Awards a grand prize, the highest available to an exhibitor. A similar award was made to MR. PARSONS individually.

I.

FUTURE RAPID TRANSIT.

LEGISLATION.

As stated in the last report of this Board, no new rapid transit construction of any large importance could be undertaken until legislation was secured covering two points, viz.: the enlargement of the power of the City to borrow money for rapid transit construction, and the removal of the existing doubt as to the power of the Rapid Transit Board to lay out routes which should embrace the bridges belonging to the City.

Two bills, embodying the views of the Rapid Transit Commission in respect to these and some minor points, were passed by the Legislature (Chapters 562 and 564, Laws of 1904). Attempts were made by various persons or organizations to secure legislation making radical changes in the Rapid Transit Act. None of this proposed legislation was adopted.

As soon as the two bills above mentioned became law the Rapid Transit Board at once proceeded to take up the general subject of extensions of the Rapid Transit system.

At the close of the year 1903 the Board had received information from the Metropolitan Street Railway Company interests to the effect that under certain conditions they would be competitors for the contract for construction and operation of another north and south rapid transit railroad. The Metropolitan Company was thereupon requested to submit to the Chief Engineer of this Board its suggestions in respect to the new route for which they had expressed a willingness to bid.

Under date of February 25, 1904, MR. VREELAND, the President of that railroad, and MR. THOMAS F. RYAN, one of the directors, addressed letters to the Board expressing in some detail their views. The Board had previously received, under date of January 20, 1904, a letter from MR. McDONALD addressed to MR. BELMONT, President of the Interborough Rapid Transit Company, setting forth his views as to future extensions. MR. BELMONT stated that the directors of his company after a full discussion thoroughly indorsed the recommendations contained in MR. McDONALD's letter, and submitted them as embodying the ideas and desires of that company. This correspondence will be found in an appendix.

On February 2, 1904, the Board of Aldermen adopted the following resolution:

RESOLVED, That the Board of Rapid Transit Commissioners be and it is hereby earnestly requested and urged to heed the appeal of the many thousands who are demanding the same transit facilities on the East Side that are being accorded to the residents of the West Side of Manhattan and to Brooklyn.

Immediately after the passage of the Acts of the Legislature above referred to, the Committee on Plans of this Board, to which the various extensions had been referred, presented the following report:

NEW YORK, April 28, 1904.

To the Board:

The Committee on Plans has had before it for some time the general subject of additional rapid transit facilities, and is now prepared to submit for the consideration of the Board certain new routes, which, it is believed, will serve to relieve some of the most urgent needs of the community. These proposals have been delayed until the present time, because no large measure of rapid transit railroad construction could possibly be undertaken until additional legislation had been obtained. It was necessary in the first place to secure the repeal of that part of the Rapid Transit Acts which put an arbitrary limit of \$50,000,000 on the amount to be expended for such purposes, and, in the second place, to have it put beyond a doubt that a route might be laid out which should, among other highways, include one or more of the City's bridges. The bills recently passed by the Legislature accomplish

these two objects, and, as they have been accepted by the Mayor, and will doubtless be signed by the Governor, the Board may now profitably enter upon an examination of this subject.

Your Committee has not only had the benefit of the careful study made by the Chief Engineer for a comprehensive plan of rapid transit in the several boroughs, but it has also been greatly aided by the practical suggestions made by or on behalf of the Interborough and the Metropolitan Street Railway Companies—two of the three great transportation agencies in this metropolis—and also by the propositions laid before it by representatives of the different localities of the City.

In dealing with the general subject, your Committee has kept in view these fundamental principles: First, that any routes now adopted should be so designed as to meet present demonstrated demands, rather than to anticipate the needs of the future; and, second, that such routes should be capable of construction and operation independently of the subway now under construction, so as to encourage competition by various interests.

In the Borough of Manhattan, where the greatest congestion now exists, two plans have been suggested.

The first, which was favored by the Interborough interests, looked to a completion of the present rapid transit scheme for Manhattan and The Bronx, in accordance with the original intentions of the Rapid Transit Board, by extending the subway south from Forty-second street and Broadway to some point near the southern end of Manhattan Island, and north from Forty-second street and Fourth avenue into The Bronx. The advantages offered by this plan are that, if carried out, there would be constructed with the least possible expenditure of time and money two complete through lines of travel—one an east side line and one a west side line, which would follow logical lines of development and avoid any unnecessary duplication of facilities and consequent waste of public money, and also for one rate of fare.

The proposals of the Metropolitan interests looked to an entirely independent system, closely paralleling for a considerable distance the present subway. The line thus suggested would start from One Hundred and Thirty-eighth street and Third avenue in the Borough of The Bronx, and would run thence down Lexington avenue and Broadway to Chambers street, and then through William and other streets to the Battery. From the Battery other proposed lines would extend through Greenwich street, West Broadway, Hudson street and Eighth avenue to Thirty-fourth street, and along Thirty-fourth street easterly to a junction with the east side line at Lexington avenue. This plan further contemplates the ultimate extension of the Eighth avenue line as far north

as the Harlem river. The peculiar advantage of this proposal is the accompanying offer of free transfers to all the surface lines in Manhattan.

It has seemed to your Committee that by some modification of the features of these two general plans, a comprehensive route might be laid out in Manhattan which would combine the merits of both, and which would also be so planned as to invite and encourage competitive bidding.

Your Committee has not been unmindful of the urgent needs of the Borough of Brooklyn. Although at first it seemed to be impracticable at this time to deal with anything but the development of the Manhattan system, yet, on further consideration, your Committee believes that the much-needed subway for South Brooklyn may also form a part of the general scheme to be proposed to the municipal authorities. By using the power recently conferred by the Legislature, a line may be planned to start from a connection with the Manhattan subway system, at a point in Canal street, thence over the Manhattan Bridge and along Flatbush avenue and its extension to Fourth avenue and thence south as far as Fort Hamilton.

The routes in Manhattan and The Bronx now proposed by your Committee follow generally the line suggested by the Metropolitan interests on the east side except that the terminus in The Bronx is moved northerly so as to connect with the present subway at One Hundred and Forty-ninth street and Third avenue. On the west side, instead of going up Hudson street and Eighth avenue, it is proposed to continue up West Broadway to Washington Square; thence under Washington Square and private property to Greenwich avenue; thence under Greenwich and Seventh avenues to Thirty-fourth street, and thence under Thirty-fourth street to a junction with the East Side Line at Lexington avenue.

Three additions to the route thus outlined are proposed by your Committee:

1. A short line to connect the Lexington Avenue Line with the present subway at a point near Fortieth street and Park avenue.
2. A line up Seventh avenue from Thirty-fourth street to connect with the present subway at Forty-third street.
3. The line from Fort Hamilton, Brooklyn, already referred to, running under Fourth avenue and Flatbush avenue, as extended, and over the Manhattan Bridge to a point in Canal street near Centre.

This large scheme of building, if approved, should not be offered to bidders as an entirety. On the contrary, it is the judgment of your Committee that it would be essential to invite bids upon it in separate sections. One section would embrace the Brooklyn line, one section might embrace the East Side Line from One Hundred and Thirty-eighth street to Forty-fifth street, another the East Side Line south of Forty-fifth street, and another the West Side Line as far north as Thirty-fourth street. The four connecting links from One Hundred and Thirty-eighth street and Third avenue to One Hundred and Forty-ninth street and Third avenue, from Park avenue and Fortieth street to Lexington avenue and Forty-fifth street, along Thirty-fourth street from Seventh to Lexington avenue, and along Seventh avenue from Thirty-fourth to Forty-third street, would also each constitute a separate section. Bidders might be allowed to bid for any one or more of the sections. The Board should reserve the right to award contracts for one or more sections, or suspend the construction of any section until such time as the increase of traffic might establish the necessity of an additional route. The invitation to contractors should also require them (as was done in the case of the Brooklyn-Manhattan Rapid Transit Railroad) to specify the maximum fare, not exceeding five cents, which should be charged, and also to specify what transportation facilities over railways connecting or to connect with the new line, each bidder would be able to assure the City. The transfers offered might be with or without change of cars, as the several bidders might be able to offer. Bidders might also be called upon to specify what rental they would be willing to offer, above the minimum provided by law. In this way competition might be invited, not merely as to the expense of construction, but also as to the accommodations offered to the public and the rental to be paid to the City for the use of its streets.

Your Committee believes that if such a scheme were adopted there would probably be genuine and active competition for the privilege of building the proposed lines. Certainly, as far as the Interborough and Metropolitan interests are concerned, they will be given a full and fair opportunity to submit offers to carry out the suggestions heretofore made by them; and the City will be in a position to accept the proposal, which, on the whole, may then seem to promise most for the interests of all our community.

Your Committee has not thought it necessary, at the present moment, to consider the details of construction, such as the number of tracks to be built on the various lines proposed, or to make any fuller suggestions to the Board as to the forms of the contract that should be offered to bidders.

Your Committee may state, however, that they are satisfied that if the suggestions here outlined are adopted, contracts can be framed which will be acceptable to responsible bidders and which will offer to the City far more favorable terms in every respect than the contracts heretofore let. In particular the Committee believes that more stringent requirements for maintaining traffic and avoiding extensive disturbances of the surface of the streets in the main thoroughfares of the City, during the construction of the subways, can be adopted; and also that stringent and satisfactory provisions in relation to the character and frequency of the service to be given may properly be inserted in the leasing parts of the contracts. If possible your Committee believes that in the construction of additional subways arrangements should be made so that the entrances to the stations may be on private property and not upon the streets, thus avoiding the impeding of traffic on the already obstructed sidewalks. This will have to be dealt with more fully in the detailed plans.

In one respect legislation will be necessary in order to enable the Board to make such contract as this Committee would recommend. Your Committee is strongly of the opinion that the statutory exemption of the contractor from taxation in respect to his interest under the contract and in respect to the rolling stock and other equipment of the road should no longer be allowed. This exemption was not part of the original Rapid Transit scheme, and was necessarily inserted in order to make the arrangement more attractive to possible bidders at a time when, without it, it seemed impossible to get any bidder. The necessity for such an exceptional privilege no longer exists, and the Committee is satisfied from inquiry, that the repeal of the exemption will not operate to deter bidders. It is not anticipated that there will be any opposition to such a measure (which, of course, cannot affect existing contracts) and as experience shows that the consents required by the State Constitution cannot possibly be secured to the plans now proposed before the next Legislature meets, there need be no delay on this account in planning for the work.

In another respect your Committee thinks it would be desirable to secure legislation before contracts for these proposed new lines are let. It has always been the desire of the Board, and, so far as legal limitations would permit, it has been the policy of the Board to provide for pipe galleries to accommodate pipes, wires, sewers and other subsurface structures. In the general plan for the Rapid Transit Railroad now under construction, it was expressly provided that along Elm street suitable galleries might be placed at the outside of the exterior tracks, and on April 19, 1900, the Board passed a resolution requiring the contractor to construct

such pipe galleries on Elm street, between the south side of Worth street and the north side of Astor place. Such construction was actually begun and continued until about November 1, 1900, on which date a communication was received from the City authorities stating it as the opinion of the Departments of Sewers and Water Supply that the interests of the City would be best served by not locating either the sewers or the water-pipes in such galleries. Upon receipt of this communication the Board caused letters to be addressed to all the various City authorities—including the Mayor and Comptroller—who had any control over structures in the City streets, explaining the situation. The Board stated in substance that the building of these galleries would be the inauguration of a great and urgent reform in the construction of under-ground works, but as they were not essential to the construction of the road, the Board desired the City authorities to declare whether they wished the experiment tried or whether they preferred to adhere to the present system of burying all sewers and pipes. The Board had acted upon the assumption that the City authorities would approve of the construction of pipe galleries, but stated that whatever conclusion the City authorities might reach in this matter the Rapid Transit Board would be disposed to adopt.

In reply, letters were received from the Commissioners of Water Supply, Highways and Sewers, from the President of the Board of Public Improvements and from the Chief Engineer of Finance Department. The substance of these communications was that the heads of the City Departments most affected by the proposed construction and arrangement were opposed to it, and as the construction involved some unanticipated difficulties, and as a fuller examination of the legal questions involved raised a doubt as to the Board's statutory authority, it was therefore determined by the Rapid Transit Board, in deference to the views expressed, not to proceed further with such construction.

In order to enable the Board to effectually deal with the subject, legislation will be necessary, which should enable it to provide for the construction of pipe galleries in connection with and as a part of the construction of any proposed new lines wherever the Board, in its discretion, might think such pipe galleries desirable.

Your Committee may add that whatever legislation on these subjects may be proposed, they consider it very expedient that separate bills should be introduced dealing with the separate subjects upon which legislation may be desired, so that if opposition should develop to any particular proposal, the defeat of such proposal would not involve the failure of legislation upon other points to which no opposition developed.

A report from the Chief Engineer, stating more in detail the proposed lines, and accompanied by an explanatory map, is herewith submitted to the Board.

Your Committee recommends that this report and the accompanying papers be printed and made a special order for a meeting to be held May 12, 1904, at which time a public hearing may properly be given.

(Signed)

A. E. ORR,
EDWARD M. GROUT,
JNO. H. STARIN,
Committee on Plans.

THE BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS,
CHIEF ENGINEER'S OFFICE, No. 320 BROADWAY,

NEW YORK, April 22, 1904.

Hon. A. E. ORR, President, Rapid Transit Board:

MY DEAR SIR—In compliance with your instructions to prepare and submit a scheme to the Rapid Transit Board uniting in one general plan the main and presently feasible features of the various plans proposed to the Board by the transit companies, the different localities of the city and by organizations of citizens, I beg leave to lay before the Board the following scheme illustrated by the accompanying map:

I would suggest that a line be laid out beginning with a connection with the present subway in The Bronx, at One Hundred and Forty-ninth street; proceeding thence southerly along Morris avenue to Third avenue; thence diagonally under private property and the intervening streets and the Harlem river to Lexington avenue; thence southerly under Lexington avenue to Fifteenth street, under Fifteenth street to Union Square and Broadway, under Broadway to Chambers street, under Chambers street to Park Row; thence across and under Park Row and private property to William street, under South William street to Broad street, under Broad street to South street, to Battery Park; thence under Greenwich street to West Broadway, under Washington Square and private property to Greenwich avenue, under Greenwich avenue to Seventh avenue and under Seventh avenue to Forty-second street to the subway at that point. In addition to the above one line diverging from the line under Lexington avenue at about Forty-fifth street, passing under private property and intervening

streets and the yard of the Harlem Railroad Company, to connect with the subway under Park avenue by an appropriate junction at a point on the various tracks of the subway south of Fortieth street; and another line under Thirty-fourth street connecting the line under Lexington avenue with the line under Seventh avenue. At curves, and at perhaps some other points, private property will have to be purchased.

These general routes would embrace the main features of the scheme proposed by the transit companies, although not at all points in exact accordance therewith; on the other hand, all the points of main traffic congestion are reached and served.

When the contract is offered provisions could be made for the dividing of this work into sections, so as to adapt the plan to competitive lines. Should the contract be awarded to the Interborough Rapid Transit Company that company would be able by means of the Fourth avenue subway and the connection at Forty-fifth street to offer a through direct east side line, and, similarly, with a connection at Forty-second street, would be able to offer a direct west side line. The terms of the offered contract could therefore provide that in the event of such an award being made the construction of the line south from Forty-second street along Lexington avenue and Broadway could be postponed until such time as the increased traffic required an additional route; and, similarly, the construction of the line under Thirty-fourth street could be postponed unless there was need for an additional east and west side line. On the other hand, should the contract be awarded to the New York City Railway Company, provision could be made for suspending the construction of the section connecting with the subway at One Hundred and Forty-ninth street in The Bronx, and the construction of the section on Seventh avenue north from Thirty-fourth street.

You have also directed me to make a suggestion for further extensions into Brooklyn, especially into South Brooklyn. I desire to invite your attention to the fact that it would be possible to build a line beginning anywhere near Fort Hamilton, extending from that point under or over Fourth avenue to Flatbush avenue and thence under Flatbush avenue and under and over the new street to be constructed from Flatbush avenue and Fulton street to the Manhattan Bridge, and thence over the Manhattan Bridge to the Borough of Manhattan, and thence from Canal street to about Centre street, whence a connection could be made for the transfer of passengers to the subway line on Elm street or on Broadway should the latter be built.

In this report I confine myself to the matter of routes, having omitted any reference to the number of tracks or other details;

these are details, however, which can be worked out when the general plan is prepared and further elaborated at the time the detail plans are devised.

Very truly yours,

(Signed) WM. BARCLAY PARSONS, Chief Engineer.

Several public hearings were held in regard to the proposed routes, and the Chief Engineer was directed to cause borings to be made along the lines recommended by the Committee on Plans, and otherwise to make careful studies of the proposed extensions to the subway system.

These studies were continued through the year. A detailed report on the subject from the Chief Engineer was withheld for this reason and also because it was thought desirable before reporting more fully upon the proposed extensions to have some adequate experience derived from the actual workings of the portion of the subway which was put in operation in the autumn.

It was therefore not until December 29, 1904, that the Chief Engineer submitted his report as to rapid transit extensions, which will be found in his report for the year appended hereto.

EXTENSIONS IN THE BRONX.

The proposed north and south lines in the Borough of Manhattan would, of course, be extended so as to tap the Bronx. Other lines, however, were specifically suggested.

Late in the year 1903 MR. McDONALD suggested the extension of the West Side branch of the Rapid Transit Railroad from 230th street and Bailey avenue up Broadway to a point opposite Van Cortlandt Park. This application was reported on by the Committee on Plans under date of April 25, 1904, their report being as follows:

APRIL 25, 1904.

To the Board:

The Committee on Plans respectfully reports that it has given careful consideration to the suggestions made by or on behalf of

the Interborough Rapid Transit Company for authority to make an extension of the railroad now under construction from Two Hundred and Thirtieth street and Broadway to a point about 288 feet north of Two Hundred and Forty-second street in Broadway, opposite to Van Cortlandt Park.

This extension, if built, would necessarily be an elevated structure, and follow the line of Broadway. Your Committee has considered whether it would not be possible to build such an extension either along some other route or by means of a subway, but they are satisfied that either of these measures would be impracticable.

The portion of Broadway in question is at present very little built upon, and the elevated structure proposed would merely be a continuation of the one which, under the existing contract, is to be built along Broadway, from about Two Hundred and Seventeenth street north to Two Hundred and Thirtieth street. In view of the large and increasing number of persons who desire to reach Van Cortlandt Park, it would seem that an extension such as is proposed would be of considerable public benefit.

Your Committee, however, thinks that in view of the advantage to the Interborough Company of such an extension in the added business it would be likely to bring, and of the fact that if authorized now the contractor's interest in the route under his contract would be exempt from taxation, the extension should only be authorized if the company is willing to undertake the construction upon bidding a nominal sum for construction. In this way any substantial use of the City's credit would be avoided.

(Signed) A. E. ORR,
 EDWARD M. GROUT,
 JNO. H. STARIN,
 Committee on Plans.

MR. McDONALD and the Subway Construction Company declined to build the proposed extension on the terms suggested.

2. The Board also had under consideration two other proposed extensions, which may be described generally as the Jerome Avenue line and the White Plains Road line. In respect to these two routes the following correspondence was had with Mr. Belmont, in which on behalf of his company he declined for the present to undertake the proposed construction.

No. 102 PRODUCE EXCHANGE,
NEW YORK, May 27, 1904.

AUGUST BELMONT, Esq., *President*, No. 23 Nassau Street New
York City:

DEAR SIR—This Commission has had several interviews with delegations of citizens from The Bronx, urging the extension of rapid transit facilities for that borough. The routes principally favored are:

First—A line from the terminus of the elevated railroad at One Hundred and Fifty-fifth street across the bridge of the New York City and Northern Railway, or thereabouts; thence through and under the hill to Jerome avenue and extending from that point through Jerome avenue to Woodlawn Cemetery with also a connection with the subway at or near the corner of One Hundred and Forty-ninth street and Girard avenue; thence running up Girard avenue to Jerome avenue, thereby affording connections with both the subway systems and the Sixth avenue railroad at One Hundred and Fifty-fifth street.

Second—A line connecting with the elevated portion of the subway at the southeast corner of Bronx Park, now in process of construction; thence through or around the easterly side of Bronx Park to the White Plains road and along that road to or near the City line where it is contiguous to the city of Mount Vernon.

As these proposed routes are virtually extensions of the lines controlled by your company, I am requested by this Commission to inquire whether you would wish to make application for a franchise for either one or both of these proposed routes, or make any suggestion relative thereto.

Yours very truly,

(Signed) A. E. ORR, President.

JUNE 4, 1904.

Hon. ALEXANDER E. ORR, *President, Board of Rapid Transit Railroad Commissioners*, No. 320 Broadway, New York City:

MY DEAR SIR—With further reference to your letter of May 27, regarding extensions of the rapid transit facilities in the Borough of The Bronx: The matter was submitted to the Board at its meeting on Wednesday, June 1, and it was not considered wise to recommend Proposition No. 2, for elevated and subway extensions in the eastern section of The Bronx, as outlined therein.

Proposition No. 1, covering elevated extensions through Jerome avenue and other sections of The Bronx, was also taken up and thoroughly discussed, and it was the sense of the meeting that we were not, just at this time, prepared to make application for this franchise.

Believe me,

Very respectfully yours,

(Signed)

AUGUST BELMONT, President.

The Board, notwithstanding the unwillingness of the Interborough interests to take up these questions at the present time, directed its Chief Engineer to prepare plans for the extensions of the Rapid Transit Railroad along the lines above referred to.

EXTENSIONS IN BROOKLYN.

1. Early in the year, at the suggestion of the Mayor, an effort was made to devise at least a temporary solution of the difficulties in the way of the use of the Williamsburg Bridge, and a conference between a Committee of the Board, the Bridge Commissioner and others interested in transportation across the bridges, was had. The various difficulties in the way of arriving at a solution of the problem of rapid transit by means of the bridges existing or in course of construction, have, however, been such that no definite result has yet been reached.

One serious difficulty in the way of arriving at any comprehensive plan of dealing with the various bridges arises from the fact that the terminal arrangements at the western end of the Manhattan Bridge would perhaps involve a change in the alignment of the Second Avenue Elevated Railroad, and this introduces complications which render the whole subject extremely difficult.

The Board, however, adopted a resolution on June 9, 1904, directing the preparation of plans for the building of a rapid transit road across the Manhattan Bridge and along Flatbush and Fourth avenues to Fort Hamilton. Plans for such a railroad were prepared and are embodied in the report of the Chief Engineer of December 29, 1904, printed in the appendix.

2. One of the Brooklyn extensions which had been suggested in 1903 was an extension of the subway already authorized from

Flatbush and Atlantic avenues along Flatbush avenue to the Prospect Park and Plaza, and ultimately further in the same direction. This extension was the subject of consideration by the Board during the early part of the year 1904, and was received with great favor by residents in that part of Brooklyn. On March 24, 1904, a route and general plan for the proposed railway was adopted and transmitted to the Board of Aldermen and the Department of Public Parks for their approval. A communication was at the same time addressed to the Board of Aldermen explaining the proposed route and the reasons for its adoption, as follows:

To the Honorable the Board of Aldermen:

The Board of Rapid Transit Railroad Commissioners for The City of New York, constituted under chapter 4 of the Laws of 1891, as amended, was duly organized, and since such organization it has conducted the inquest and investigation necessary in the premises as to whether it would be for the interest of the public and of The City of New York that a rapid transit railway or railways for the transportation of persons and property should be established therein; and after such inquest and investigation said Board has duly determined that such rapid transit railway in the Borough of Brooklyn, in addition to those already existing or in course of construction, is necessary for the interests of the public and of said city; and by the concurrent vote of six members of the Board has determined and established the routes and general plan, and herewith transmits to your Honorable Body a copy of the plan and conclusions as adopted, including such routes and general plan of construction.

The rapid transit railway now in course of construction in the boroughs of Manhattan and Brooklyn will terminate at the intersection of Flatbush and Atlantic avenues in Brooklyn. In transmitting to the Municipal Assembly the route and general plans for that railway in February, 1901, this Board said:

"The route now proposed does not afford a complete solution of the rapid transit problem in the Borough of Brooklyn. It is, however, beyond doubt the best route for the first rapid transit connection between the boroughs. It reaches two great distributing points in Brooklyn, Borough Hall Park and the Long Island Railroad Station. The new road can be thence conveniently extended, as the financial means of the City will permit, to any and every important district in Brooklyn."

This Board, in pursuance of the views then expressed, now proposes an extension in Brooklyn from the Long Island Railroad Station under Flatbush avenue, and the Park Plaza, along Prospect Park to the Willink entrance, and thence under Ocean avenue to the southerly side of Parkside avenue, where a junction can readily be made with the depressed tracks of the Brighton Beach Road.

The road is to be a subway through its entire length and will not in any way disfigure Park Plaza or Prospect Park. The principal features of construction are to be the same as those of the subway now nearly completed in Manhattan, with which your Honorable Body are already familiar.

It is proposed to authorize the building of four tracks from Atlantic avenue to the Park Plaza; although only two tracks will probably be built at first. At the Park Plaza, a loop is proposed which will enable cars to be conveniently turned back at that point, will afford some temporary storage capacity, and will permit of easy extension of another subway along the Eastern parkway, if that course is thought desirable in future. Care will be taken in preparing the detailed plans for the proposed subways across and around the Plaza, to preserve all its surface features intact and especially to avoid any interference with the fountain or arch.

From the Plaza it is proposed to carry two tracks along Flatbush avenue as far as the Willink entrance. From this point, the route will proceed along Ocean avenue, under which eight tracks are to be constructed—two for passing trains and the other six for terminals and storage of cars. The plan contemplates that ultimately four more storage tracks may be built under Prospect Park, adjacent to Ocean avenue; and this Board is satisfied that if such additional tracks are hereafter built, they will be at such a depth beneath the surface as not to cause any injury whatever to the park itself.

The tracks are to be placed substantially on a level with each other, except where engineering reasons may require a greater or less depression of one or more tracks. The road is to be as near the surface as street conditions will permit, thus rendering the stations as accessible to passengers as possible. The work of construction will, it is expected, be so expedited that the discomforts and delays resulting therefrom will be rendered as slight as practicable. The railway tracks will be of standard gauge; the cars will be large and commodious; the motive power will either be electricity or some other power not requiring combustion within the tunnel; and the motors are to be capable of moving trains at not less than forty miles an hour for long distances, exclusive of stops.

The following are some of the reasons which have induced this Board to lay out the proposed route:

1. It will serve a large and rapidly growing district in Brooklyn which is now not served at all except by surface lines.

2. The proposed railroad will afford a new, easy and convenient access to Prospect Park at the Plaza and at the Willink entrance.

3. The opportunity to make a connection with the Brighton Beach Railroad will permit the establishment of a continuous line of electric railroad from Brighton Beach through Brooklyn and Manhattan to the termini, in the Borough of The Bronx.

4. The establishment of numerous tracks for terminal and storage purposes in Ocean avenue follows the precedent already adopted in creating terminal facilities under the surface of Broadway, in the Borough of Manhattan. It has been the custom of the elevated railroads to acquire private property for terminal yards, and the same custom has been followed by the Interborough Company in one or two instances in connection with the subway. Such a method in certain localities is highly objectionable. The property thus devoted to a railroad yard becomes an eyesore, and is apt to be very detrimental to the proper development of surrounding territory. The use of the soil under Ocean avenue for terminal purposes removes any such objection, creates a railroad yard which the Board is advised by its Engineer is in a favorable location for satisfactory operation and avoids the payment by the City of the cost of land for terminals.

The consent of your Honorable Board to the proposed route is respectfully requested.

In Witness Whereof, This Board has caused its seal to be hereto affixed and these presents to be attested by its President and Secretary this 31st day of March, 1904.

THE BOARD OF RAPID TRANSIT RAILROAD
COMMISSIONERS FOR THE CITY OF NEW
YORK.

[SEAL]

BION L. BURROWS, Secretary.

By A. E. ORR, President.

At the same time the following letter was addressed to the Park Department:

MARCH 31, 1904.

To the Commissioners of Public Parks:

GENTLEMEN:—Under the instructions of this Board I transmit herewith a copy of certain resolutions adopted on March 24, 1904,

proposing an extension of the rapid transit railroad in Brooklyn, from the Long Island Railway station at Flatbush avenue to the Park Plaza along Prospect Park to the Willink entrance, and thence under Ocean avenue to the southerly side of Parkside avenue, where a junction can readily be made with the depressed tracks of the Brighton Beach Road. Accompanying these resolutions is a copy of a communication which has been this day addressed to the Board of Aldermen on the subject, and to which communication I beg leave to refer you for a more detailed description of the route and general plans of construction, as well as of the reasons which have actuated the Board in proposing this extension.

It is proper to add that if these general plans are approved the Board of Rapid Transit Railroad Commissioners, in preparing detail plans for the construction of the road, will be happy to confer with you upon the subject, and will take pains to conform in every way to your wishes in regard to preserving the Park property committed to your care.

The consent of your Commission to the proposed route and general plans is hereby requested.

(Signed) Respectfully yours,
A. E. ORR, President.

The plans and conclusions of the Rapid Transit Board were approved by the Board of Aldermen on August 9th, 1904, and by the Acting Mayor on August 22d, 1904. Application was thereupon made to the property owners for their consent as required by the Constitution, and at the close of the year the counsel to the Board were able to report that the consents of a majority of the property owners had been obtained. The consent of the Park Commission, however, has not been secured, and a modification of the route may be required.

3. In the report of the Committee upon the Flatbush avenue extension above referred to it was stated that a loop was proposed at the Park Plaza which would permit the building of another subway along the Eastern Parkway if that course was thought desirable in future. The Board have been strongly urged by owners of property in that direction to extend the subway system along the Eastern Parkway at an early date. Such a line is included in the Chief Engineer's report of December 29, 1904, and will be the subject of further consideration by the Board.

MOVING PLATFORMS.

The subject of moving platforms has been strongly pressed upon the attention of the Board during the year, especially with reference to a crosstown line to be built along Thirty-fourth street. The value of such a line, if the system proposed is practicable upon a large scale, can hardly be a matter of doubt, and at a hearing held on November 29th, 1904, a number of railroad and electrical experts appeared before the Committee on Plans of the Board to set forth their views as to the feasibility of the proposed system. The statements of these experts were transcribed by a stenographer, and printed copies have been laid before all of the members of the Board for their information. The matter is receiving further consideration.

II.

GRANTS OF FRANCHISES.

NEW YORK CONNECTING RAILROAD COMPANY.

During the year 1903 the Board received an application from the New York Connecting Railroad Company for the grant of a franchise to connect its lines in the Borough of Brooklyn with the lines of the New York, New Haven & Hartford Railroad Company in the Borough of The Bronx, passing through the Borough of Queens and across Ward's Island and Randall's Island. This application involved some novel questions relative to the construction of the road across the islands referred to. Ward's Island belongs in greater part to the corporation of The City of New York and its property is leased to The State of New York for use as one of the State hospitals for the insane. Randall's Island is in part owned by The City of New York and in part by the House of Refuge under a defeasible title.

After a careful study of the various engineering and legal questions the Board on June 23d, 1904, adopted a certificate granting the proposed franchise to the New York Connecting Railroad Company and transmitted the same to the Board of Aldermen with the following communication:

To the Honorable the Board of Aldermen of The City of New York:

The New York Connecting Railroad Company is a steam railroad corporation owning a railroad wholly within the limits of The City of New York. In pursuance of the provisions of the General Railroad Law it has filed a route and profile showing an extension which it desires to build entirely within this City. The proposed route begins in the Borough of Brooklyn, close to the line of the Borough of Queens, and near the Cemetery of the Most Holy Trinity, and thence the route runs through the Borough of Queens to the East River, and crosses over the East River by a bridge, and runs over Ward's Island and Randall's Island to a point in the Borough of The Bronx, where it forms a connection with the lines of the New York, New Haven and Hartford Railroad Company.

The New York Connecting Railroad Company has applied to this Board, pursuant to chapter 4 of the Laws of 1891, and the various acts amendatory thereof and supplemental thereto, to fix and determine the route or routes by which the applicant corporation may connect with other railroads or the stations thereof in The City of New York and may extend its lines within the City, and for authority to acquire terminal and other facilities necessary for the accommodation of the traveling public on certain streets and places in The City of New York as shown upon the map and profile submitted by it, together with all necessary sidings, platforms, stations and other appurtenances, and to lay its tracks and operate its railway and to transport passengers or freight over the same, and to run either passenger trains or freight trains, or mixed trains, and that this Board shall fix and determine the location and plans of construction of the said railway.

The New York Connecting Railroad Company has obtained from the Legislature of the State of New York, by chapter 752 of the Laws of 1900, the right and privilege to construct upon the line of its railroad a bridge of a single span across East river, at or near Hell Gate, together with the necessary viaduct and approaches, and to maintain and operate the same. The said bridge is to have an elevation of not less than one hundred and thirty-five feet above mean high water, and to span the East river from abutments built upon the shores thereof. This Board is advised that the railroad company has also obtained from the United States authorities approval of the proposed bridge.

The proposed route of the New York Connecting Railroad Company lies wholly within private property acquired or to be acquired by the railroad company, except where the same crosses over or under various City streets and except where it crosses

over Ward's Island and Randall's Island and the waters adjacent thereto. The route does not at any point follow the line of any City street or avenue. For the most part it will be constructed upon a viaduct or embankment running through the blocks, and near the river it will necessarily attain a great height above the ground, inasmuch as the bridge, as above stated, must be at a height of one hundred and thirty-five feet above mean high water.

The stock of the New York Connecting Railroad Company is owned jointly by the Pennsylvania Railroad Company and the New York, New Haven and Hartford Railroad Company. The Pennsylvania Railroad Company also owns the stock of the Pennsylvania, New York and Long Island Railroad Company, which is now constructing the new tunnel line extending from New Jersey under the Borough of Manhattan to the Borough of Queens, and a controlling interest in the stock of the Long Island Railroad Company.

By means of the new railroad now proposed, the controlling interests have in contemplation the establishment of a through line of railroad for the transportation of freight and passengers between all points reached by the Long Island Railroad and all points reached by the New York, New Haven and Hartford Railroad. The new railroad will, it is expected, be used chiefly for carrying freight. The result here sought is a closer intimacy between the business interests of Brooklyn and the rest of Long Island and those of New England, and a direct freight outlet and inlet from Long Island to the Northeast, North and Northwest.

This Board, after careful consideration of the application, did on the 23d day of June, 1904, by a concurrent vote of six of its members, fix and determine the location and plans of construction of the said railroad of the New York Connecting Railroad Company upon the proposed routes and of its tracks and facilities, the times within which they are to be respectively constructed and the compensation to be paid therefor to the City by the railroad company, and did also prescribe such terms, conditions and requirements as to the Board appeared to be just and proper for the grant in question, including the terms, conditions and requirements provided by the Rapid Transit Act, and including a provision that the company shall from the time of the commencement of the operation of such railroad under the determination of the Board annually pay to the City a rental for a period of twenty-five years, beginning with such operation, and also providing for a readjustment of the amount of such sum or rental at the expiration of such period, and at intervals thereafter of twenty-five years. The general

form of the certificate granting this franchise follows the form of the certificate granted to the Pennsylvania, New York and Long Island Railroad Company, and approved by your Honorable Board on December 16th, 1902.

In view of the fact that this railroad, unlike the Pennsylvania tunnel, does not follow the line of any street, the compensation payable to the City should obviously be calculated upon a different scale. So far as the franchise to cross the East river is concerned, the sum of one hundred dollars a year has been fixed, being the same amount that was fixed in the Pennsylvania franchise for the right to pass under the East river. For the remainder of the road an annual charge is made of five cents a linear foot of railroad track for the first ten years, and ten cents a linear foot for the next fifteen years. These amounts, considering the small extent to which the railroad makes use of any City property in the streets, are considered by this Board full and reasonable compensation.

So far as Ward's Island and Randall's Island are concerned, the railroad company will need to make use of the property, first by obtaining the right to place foundations on the ground for the support of their viaduct, and, second, by securing an easement for an overhead right of way between such supports. Inasmuch as the exact extent of such use cannot now be determined, and inasmuch as the Board of Sinking Fund Commissioners is the usual authority for determining the value of property disposed of by the City, it has been agreed that the compensation to be paid to the City for the property so needed shall be determined by the Sinking Fund Commissioners.

The certificate provides that the new railroad shall be constructed so as to cross all streets, either below or above grade at suitable distances; that all plans for and the method of doing the work shall from time to time be subject to the approval of the Rapid Transit Board, and that the roadbed, except on bridges, shall be ballasted with either blast furnace slag or broken stone of a hard, durable quality, so as to avoid dust as far as possible.

The motive power to be used by the new railroad company is to be steam, but the railroad company is given the option to substitute electricity at any time. It is also provided that if by reason of increased density of population upon or along the line of the new railroad the use of steam shall constitute a nuisance, the railroad company shall change its motive power upon the demand of the Rapid Transit Board, unless the Supreme Court should hold that the use of steam was not in fact a nuisance or dangerous to the residents along the route or that it did not materially depreciate the value of property.

This Board is of the opinion that while every improved means of communication is of benefit to the City, the fact that the proposed new road will give to the Boroughs of Brooklyn and Queens, and through them to the whole of Long Island, direct railroad communication with New England, is a matter of peculiar advantage to the City as a whole and to the two Boroughs above mentioned in particular. It is to be remembered that large tracts of land in those two Boroughs are vacant and well adapted for manufacturing and other business enterprises. Up to the present time the fact that they were cut off from the continent of America by broad tidal streams has undoubtedly operated to retard their development. The plans now in contemplation will, it is believed, tend to bring into use many tracts of land within the City which would otherwise not be available; and by enhancing taxable values and also by broadening the area within which the industries of the City are carried on it will in a great variety of ways enure to the benefit of the entire community. When to this is added the fact that the City will receive a substantial income from the railroad corporation, which is to be readjusted in the future at intervals of twenty-five years, but is never to be less than the greatest rental now fixed, it is believed that the proposed arrangement is one which will commend itself to the judgement of your Honorable Board.

A copy of the certificate of this Board, together with a copy of a written instrument duly executed and acknowledged by the New York Connecting Railroad Company accepting the said franchise and all the terms, conditions and requirements thereof, is transmitted herewith.

This Board feels that it is for the interest of the public and of The City of New York that the necessary constitutional consents to the construction and operation of said proposed railroad should be obtained as soon as possible.

In Witness Whereof the Board of Rapid Transit Railroad Commissioners for The City of New York has caused its official seal to be hereto affixed and these presents to be attested by its President and Secretary this 27th day of June, 1904.

BOARD OF RAPID TRANSIT RAILROAD COM-
MISSIONERS FOR THE CITY OF NEW YORK.

By A. E. ORR, President.

Attest:

BION L. BURROWS, Secretary.

The full text of the certificate will be found in the appendix. The Board of Aldermen has not yet acted in regard to the subject.

On December 7th, 1904, the New York Connecting Railroad Company applied to this Board for an extension of three months to enable it to obtain the consent of the local authorities, and this extension of time was granted.

NEW YORK AND JERSEY RAILROAD COMPANY.

The franchise granted to this company under date of July 10, 1902, terminated their route at the intersection of Greenwich and West Tenth streets, at which point it was proposed to construct a terminal on private property. Work on the tunnels under the North River was begun shortly after the franchise had been approved by the various city authorities, and one of the tunnels was completed in the spring of 1904. The other tunnel or parallel tube is rapidly approaching completion.

Under date of March 2d, 1904, the New York and Jersey Railroad Company applied to the Board for an extension of its line from the terminus at Greenwich and West Tenth streets to Sixth avenue and thence northwardly along Sixth avenue to the intersection of Thirty-third street. This application in various forms was the subject of very extended consideration by the Board and of numerous public hearings during the year.

As the result of this inquiry and study the Committee on Contracts of this Board under date of December 15th, 1904, presented the following report to the Board, which sets forth the history of the application and the recommendations of the Committee in regard to it:

DECEMBER 15, 1904.

To the Board of Rapid Transit Railroad Commissioners:

The Committee on Contracts respectfully reports as follows in relation to the application of the New York and Jersey Railroad Company for an extension of its line:

Under date of March 2, 1904, the company applied for a right to extend the line along Christopher street and Sixth avenue to Twenty-third street. After examination of the subject your Com-

mittee, at a meeting of April 28, 1904, reported adversely, upon the ground that it was "not willing to recommend a perpetual franchise in a case like this."

Under date of May 5, 1904, the company applied for "a limited term franchise for its proposed extension under Sixth avenue to Thirty-third street;" but under date of May 24, 1904, the company withdrew that application and substituted an application for an extension from Christopher and Greenwich streets easterly under Christopher street and Ninth street to Third avenue.

At the meeting of the Board held June 9, 1904, your Committee reported in favor of granting the application for a cross-town line, which, it was thought, was not open to the same objections as the application for a north and south line, and had superior advantages as a traffic distributor. In view of the fact that the proposed extension along Ninth street was merely an extension of an interstate railroad, and that it would have but little value as an independent route, your Committee thought that a perpetual franchise might properly be granted.

At subsequent meetings of the Board much opposition on the part of property-owners in Sixth avenue and others developed to the abandonment of the proposed line on Sixth avenue, and the Board took no action upon the report of your Committee, the matter being laid over until the Autumn, at which time renewed hearings have been had and various property interests have been heard, both for and against various suggestions that have been made.

In order to obviate the objection entertained by your Committee to the granting of a perpetual franchise in Sixth avenue, it has been suggested that the City might make it one of the conditions of the grant that a right of purchase of the Sixth avenue line, from Ninth street to Thirty-third street, should be reserved. This condition the New York and Jersey Railroad Company is willing to agree to, provided it should not be exercised until after the expiration of twenty-five years. This proviso your Committee think reasonable. Your Committee are advised by counsel that the Board has the power to insert such a right of repurchase as one of the terms and conditions of the franchise.

Your Committee is strongly of the opinion that a cross-town line along Ninth street would be of great advantage to the City at large in the distribution of travel to the various north and south lines of railroad; and it believes that the grant of a right to build along Sixth avenue should only be made in conjunction with a requirement to build, at the same time, the cross-town line as far as Second avenue. This condition, also, the New York and Jersey Railroad Company has signified its willingness to accept.

Your Committee therefore recommend that a certificate be prepared granting to the New York and Jersey Railroad Company a franchise to extend its route from the present terminus at the intersection of Christopher and Greenwich streets, in the Borough of Manhattan, along Christopher street and Ninth street to Fourth avenue, with a loop around the block now occupied by the Bible House; and with a further extension from Sixth avenue and Ninth street along Sixth avenue to the southerly side of Thirty-third street.

The report of the Chief Engineer of this Board, herewith submitted, shows that in his opinion the route on Sixth avenue should be as near the surface as possible, but that, in view of possible cross-town lines hereafter to be authorized, the Board should reserve the right to require a greater depth between Twenty-third and Thirty-third streets. The Chief Engineer also advises that the extension proposed should not in any case extend beyond the southerly side of Thirty-third street. His reason for this is based upon the likelihood of a subway being authorized in Broadway, which would certainly involve the building of a large station in the neighborhood of Thirty-fourth street, and the railroad now proposed should be so constructed as not to interfere with that station.

Under the statute, the railroad company must pay the City a compensation to be adjusted at intervals of not more than twenty-five years. It is proposed that for the first ten years the railroad company, for the extensions now to be authorized, shall pay 50 cents per foot of track and of station platform, and shall also pay \$9,000 a year, being 3 per cent. of the estimated gross earnings of \$300,000 a year. For the next fifteen years it is proposed that the company shall pay one dollar per foot of track and station platform and 5 per cent. upon the estimated gross receipts, such estimate to be made at the expiration of the first ten years upon the basis of the information then available as to actual traffic returns.

So far as the extension from Ninth street to Thirty-third street along Sixth avenue is concerned, it is proposed that the City, in case it desires to purchase that portion of the railroad for use as a part of some municipal system of rapid transit, shall have the right to purchase the same at any time after twenty-five years, on paying to the owners the estimated value of such extension, exclusive of the value of the franchise; the value, however, in no case to be estimated at more than the actual cost of construction. In order to ascertain the cost of construction, it is proposed that the plans and specifications shall be subject to the approval of the Board; that the Board shall have a right to inspect the work

and to see the books, contracts and papers of the company; and that as soon as the work is finished, a statement of cost shall be ascertained and filed with the City, thus fixing the maximum price to be paid. If permanent additions to the road should be subsequently constructed, the same course should be pursued, so that at all times the City would have a statement of the entire cost of the structure, being the maximum amount it would have to pay in order to acquire the Sixth avenue extension. The form of the franchise in other respects should, in the opinion of your Committee, follow substantially the form of that granted to the Hudson and Manhattan Railroad Company, with some additional safeguards for the City and for abutting property-owners.

If the foregoing general features of the proposed grant are satisfactory to the Board, counsel will be ready to submit at the next meeting a form of certificate.

Respectfully submitted,

(Signed) A. E. ORR,
 EDWARD M. GROUT,
 CHAS. S. SMITH,
 Committee on Contracts.

The views of the Committee on Contracts as printed above were ratified and approved by the Board with the important addition that the Ninth street extension should also be subject to purchase by the city at not more than cost; and at its next meeting, on December 22d, 1904, the Board adopted a certificate granting the franchise suggested. A copy of this certificate will be found in the appendix.

The certificate having been duly accepted by the New York & Jersey Railroad Company, it was transmitted to the Board of Aldermen with the following communication:

To the Honorable the Board of Aldermen of the City of New York:

On December 16th, 1902, your honorable body approved a certificate granted by this Board to the New York & Jersey Railroad Company (hereinafter called the Tunnel Company) by which the Tunnel Company was duly authorized to construct and operate a tunnel railroad in the City of New York, having its eastern terminus in the block bounded by Christopher, West Tenth, Greenwich and Hudson Streets, in the Borough of Manhattan, and thence extending westwardly under the Hudson river, and to be connected

with a railroad or railroads in the State of New Jersey, thus forming a continuous line for the carriage of passengers and property between the above easterly terminus of the railroad of the Tunnel Company within this City, and points along the lines of such railroads in the State of New Jersey and other States.

The Tunnel Company, pursuant to Section 32 of Chapter 4 of the Laws of 1891, as amended by Chapter 584 of the Laws of 1902 (which entire statute, as amended by various acts, and as now in force, is hereinafter called the Rapid Transit Act), has made application to the Board of Rapid Transit Railroad Commissioners of the City of New York (which is hereinafter called the Board) for authority to lay railroad tracks along a certain route within this City, and to acquire terminal and other facilities necessary for the accommodation of the traveling public, and to construct and operate its railroad along the said route, all as set forth in the certificate herewith transmitted, dated December 22d, 1904, and to transport over the said railroad passengers and property or both.

The Board, on the 22d day of December, 1904, by concurrent vote of six of its members as follows: Alexander E. Orr, Edward M. Grout, John Clafin, Woodbury Langdon, Charles Stewart Smith and Morris K. Jesup, fixed and determined the routes and the location and plans of construction of said railroad of the Tunnel Company upon such routes and of its tracks and facilities, the times within which they shall be respectively constructed, and the compensation to be paid therefor to the City by the Tunnel Company; and also prescribed such terms, conditions and requirements as to the Board appeared to be just and proper for the grant in question, including the terms, conditions and requirements provided by the Rapid Transit Act and including among them a provision that the Tunnel Company shall from the time of the commencement of the operation of such railroad under the determination of the Board, annually pay to The City a sum or rental for certain periods aggregating less than twenty-five years beginning with such operation, and also providing for a re-adjustment of the amount of such sum or rental at the expiration of such periods and at intervals thereafter of twenty-five years.

The said locations, plans of construction, compensation to The City, terms, conditions and requirements are fully set forth in the certificate dated December 22, 1904, a copy of which is transmitted herewith. A copy of a written instrument duly executed and acknowledged by the New York & Jersey Railroad Company accepting the said franchise and all the terms, conditions and requirements thereof is annexed to the said certificate and is also transmitted herewith.

The application of the New York & Jersey Railroad Company for the extensions now proposed has been for some months a subject of very careful consideration by the Board, and many persons, some of them representing large property interests along the line of the proposed extensions, have been heard in reference to the matter.

It is plain that the convenience of passengers using the tunnel heretofore authorized will be greatly promoted by enabling them to travel, without change of cars, nearer to the centre of the City, and to points more convenient for distribution over other lines through the City, than the terminus at Greenwich and Christopher streets. It is also plain that, in so far as the convenience of passengers is thus promoted, the commerce of the City of New York will be aided by bringing from other States persons desirous of doing business here.

The Borough of Manhattan, owing to its peculiar shape, necessarily has its main lines of travel North and South, and the distribution of traffic from railways coming under or across the East river or the Hudson river will be best accomplished by carrying passengers to points where they change on to North and South lines. For this reason the Board has favored an extension of the Tunnel Company's railroad easterly from Greenwich street (where a connection can be made with the Ninth Avenue Elevated Railroad) across Sixth Avenue and Broadway and so on to Fourth Avenue—thus affording connection with several important North and South lines, including the subway in Fourth Avenue. Beyond this point it is thought that the line need not be extended at present; but the Board, under the certificate sent herewith, may, at any time before the Ninth Street extension is completed to Fourth Avenue, require the Tunnel Company to build it as far as Second Avenue.

An extension from Christopher Street Northerly along Sixth Avenue will also, it is believed, prove of great advantage. Very extensive and important business interests are now situated along Sixth Avenue or within a block of it in either direction, east and west. These commercial interests will be benefited and the convenience of those who are employed by or deal with them will be promoted, by affording rapid and easy communication with New Jersey.

The use of a North and South avenue by a private company for the construction of a subway seemed to the Board open to very serious objection, unless The City within some reasonable period and upon some reasonable terms could control absolutely the structure so built. Sixth Avenue at present is less valuable than many other streets in the City for rapid transit purposes,

because at its Southerly end it does not directly lead to the Southern part of Manhattan Island, and, at its Northerly end it is closed by Central Park. It may, however, in time come to be needed for a North and South through line, passing under Central Park. These considerations have led the Board to the conclusion that if a franchise on Sixth Avenue were granted, it should be only upon the condition that The City, at the expiration of twenty-five years from the time the road shall begin to be operated, shall have the right to purchase the road at a reasonable price not exceeding the actual money cost of construction, and without any allowance for franchise value.

The Board is advised by its Chief Engineer that in his opinion the route on Sixth Avenue should be as near the surface as practicable, except that between Twenty-third and Thirty-third streets the Board should reserve for a short time the right to require a greater depth. Accordingly, the certificate to the Tunnel Company provides for a shallow subway, but that the Board, by written notice to be given within one year, may require any portion of the line north of Twenty-third street to be built at such depth as the Board may fix. It is, however, expected that crosstown lines will usually be constructed at a depth of not less than twenty feet in the clear below the street surface, leaving the space near the surface in the Avenues for North and South rapid transit subways.

The possible use of Ninth street for rapid transit purposes is more remote and doubtful than the use of Sixth Avenue for similar purposes, but the Board is of opinion that the same conditions as to purchase by The City may properly be imposed, in so far as they relate to the railroad east of Sixth avenue.

A wholly different set of considerations arises in respect to the short piece of railroad between Greenwich street and Sixth avenue. As stated above, the terminus of the tunnel heretofore approved by your honorable Board was to be in the block bounded by Christopher, West Tenth, Greenwich and Hudson streets, and the grant of the franchise up to that point was made in perpetuity. The reasons for making such grant were fully set forth in the communication to your honorable Board dated July 15, 1902, and need not be repeated here except to quote the following passage:

“The present applicant has already a permanent grant by the Land Office of this State of a right of way 160 feet wide under the Hudson River, and a considerable part of the tunnel has been actually constructed under that grant. The railroad is to be maintained and operated in the States

of New Jersey and New York, and any severance of the railroad at the western boundary line of the City is impracticable. The public policy against grants in perpetuity, in which the Board believes, is obviously, therefore, not applicable to the franchise now proposed. The short right of way leading to the tunnel already owned by the applicant company in perpetuity, it is plain, would never be of use to any enterprise except that Company or its successor in the ownership of the tunnel. A readjustment of rental charges at intervals of twenty-five years will in this case give The City all of the practical advantage which would be given by a limit of the life of the grant."

It is now proposed to give up the terminus near Christopher and Greenwich streets, in view of the eastward and northward extension of the tracks. If The City should hereafter acquire the railroad under Sixth avenue and Ninth street, the Tunnel Company should in fairness be entitled to have a suitable terminus for its railroad. The Board, therefore, proposes that the grant to the Tunnel Company from Greenwich street to Sixth avenue shall be in perpetuity; and it believes that this grant should properly be so made, as it is in reality a mere terminal facility of no value except in connection with the tunnel under the Hudson river.

It is proposed that the subway under Christopher and Ninth streets shall be at a considerable depth. The reason for this is that Greenwich street, Hudson street, Greenwich avenue, Sixth avenue, Fifth avenue, University Place and Broadway may all sooner or later be required for building north and south subways, which would be constructed, like the present subway, as near the surface as local conditions will permit. By building the cross-town line under Christopher street and Ninth street at such a depth as will leave twenty feet clear between the top of that tunnel and the street surface, any such north and south subways can be passed over the proposed structure.

Upon these general lines the accompanying certificate has been drawn. Its provisions follow closely the provisions of the certificate to the Hudson & Manhattan Railroad Company, which was the subject of very careful consideration, and was approved by your honorable Board on December 22d, 1903.

The essential features of the proposed certificate are these:

FIRST.—A grant by The City of rights as follows:

- (a) To construct and operate a railway with two tracks on a route beginning at the terminus of the railway of the

Tunnel Company, as at present authorized, at the intersection of Greenwich and Christopher streets, and thence running easterly under Christopher street to Sixth avenue, thence with one branch under Sixth avenue to a terminal station at or near the intersection of Sixth avenue and Thirty-third street, and with another branch crossing diagonally under Sixth avenue to Ninth street, and thence easterly under Ninth street to a terminal station at or near the intersection of Fourth avenue and Ninth street.

- (b) To build, maintain and operate subway stations as follows: Under Christopher street between Greenwich and Hudson streets, at the intersection of Sixth avenue with Christopher, Fourteenth, Eighteenth, Twenty-third, Twenty-eighth and Thirty-third streets, and under Ninth street between Broadway and Fourth avenue. In connection with the last-named station, authority is given to build a foot subway under Fourth avenue leading to the Astor Place station of the present subway.
- (c) To transport upon the said railway and tunnel persons and property; to use therefor and in connection therewith all suitable appliances; to maintain and operate wires and other appliances for the distribution of power, heat and light for the use of the railroad and for no other purpose; and to construct and operate terminal tracks and switches, power plants, shafts for access to the surface, etc., upon private property.
- (d) To build under Ninth street from Fourth avenue to Second avenue a further extension of the road, if the Board shall so require by a notice to be given at any time before the railroad is completed up to Fourth avenue.

SECOND.—The consent of the Board of Aldermen and the Mayor must be obtained by the Company within six months. The consent of property owners of one-half in value of the property along the various streets and avenues of the route, or in place thereof the consent of the Appellate Division, must be secured within one year. These periods may be extended by the Board upon good cause shown.

THIRD.—The Tunnel Company is to begin the construction of its extensions within six months after it shall have obtained the consents required by the Constitution of the State of New York, and complete the construction of the extensions within five years after they are begun.

FOURTH.—The Tunnel Company is to pay to The City the following compensation, beginning when the extensions now authorized are completed and ending in twenty-five years from the time when the railroad is completed under the Hudson river to the intersection of Christopher and Greenwich streets. As this railroad will be completed to the point last mentioned before the extensions now authorized can be completed, the period during which the compensation now fixed is to run will be less than twenty-five years. The payments are as follows:

- (a) A charge of fifty cents per annum per linear foot of single track and of station platform for the first ten years, and of one dollar per annum per linear foot during the next period of fifteen years or less.
- (b) A charge for all vault space used for stations and station approaches—that is to say, all space within ten feet of the street surface used for such purposes—on a basis of four per cent. of the value of such land based on the assessed value of land immediately adjoining, exclusive of buildings.
- (c) A further annual sum for tunnel rights under the streets and avenues of the route, of three per cent. of the gross receipts for the first ten years and five per cent. afterwards. The gross receipts are estimated by agreement at three hundred thousand dollars a year for the first ten years. After the first ten years the gross receipts are to be determined upon the basis of the information then available as to actual traffic returns, and fixed either by agreement or by arbitration.
- (d) The rental payable to The City, in accordance with the statute, is to be re-adjusted at the end of the period of twenty-five years above mentioned, and thereafter at intervals of twenty-five years. If the City and the Company shall not agree upon the rates at the time of such re-adjustment, they are to be determined by the Supreme Court of this State.

FIFTH.—Under Christopher street and Ninth street the railroad is to be at a depth of about twenty feet below the street surface. After turning into Sixth Avenue the railroad is to rise and approach the surface, so as to be as near the surface as local conditions will permit. Tunnel entrances are to be constructed entirely through private property, unless the Board by resolution shall specially approve of an exit or exits situated within the streets. This will do away with the use of kiosks in the street.

Excavations are to be made without disturbing the surface of any street, unless the Board, wherever local conditions make excavations from the surface necessary for efficient construction, grants the right to make such excavations subject to suitable conditions and regulations. The Tunnel Company is to support the elevated railroad structures, street railroads, water and gas mains, steam pipes, electric subways, sewers and other structures, and to make good to every owner of property abutting upon the railroad, or which shall be injured by the work of construction or by operation thereof, all physical damage which shall be done to such abutting or injured property through any act or omission of the Tunnel Company or its contractors.

The Tunnel Company is to give a bond of two hundred thousand dollars for the faithful performance of the conditions and requirements of the certificate relating to construction.

SIXTH.—The motive power is to be electricity or such other power (not involving combustion in the tunnel) as may be approved by the Board.

SEVENTH.—The plan and profile of the railroad, of which copies are annexed, are to be substantially followed, subject to deviations not inconsistent with the other provisions of the certificate, if permitted by the Board.

EIGHTH.—The railroad is to be diligently and skilfully operated, with due regard to the convenience of the travelling public; and if the Tunnel Company fails to carry out this provision, the burden of proof in any proceedings which may be instituted by any proper authority to compel compliance therewith is to be upon the Tunnel Company to show that it has discharged the duties and obligations imposed upon it.

NINTH.—The City is to have a lien upon the franchise and upon the real property of the Tunnel Company under the streets, to secure the payment of the compensation and rental.

TENTH.—In case it is desired to acquire the portions of the proposed railroad lying in Sixth avenue, or in Ninth street east of Sixth avenue, The City is to give the Tunnel Company two years' notice. At the date fixed in the notice for acquiring the portion of the road which is to be so taken, The City is to pay the value of the road, not exceeding the actual cost of construction. In order that the Board may be fully advised as to the character and cost of construction of the railroad, all plans and

methods of doing the work are to be subject to the approval of the Board. It is to have the right to inspect the work while in progress, and also to inspect materials used therein and to examine the books, contracts and papers of the Tunnel Company. As soon as the railroad is completed, the Tunnel Company is to file with the Board a statement of the cost of construction of the portions which The City has the right to acquire; and if those statements are disapproved by the Board, the whole subject of cost is to be submitted to arbitration forthwith. In this manner the actual cost of construction will be determined at the time, instead of being left to be determined under great difficulties many years afterwards. If at the time of acquiring a part of the railroad The City and the Tunnel Company do not agree upon the then value, that amount is to be determined by arbitration, but always with the proviso that the value so determined shall not be more than the actual cost of construction.

ELEVENTH.—Careful provision is made in respect to the manner in which any arbitrations are to be conducted.

TWELFTH.—The Tunnel Company agrees that it will not at any future time oppose the construction of any rapid transit or street railroad over, along or under any portion of the streets to be occupied by it, where the same do not actually interfere with its structure.

THIRTEENTH.—All duly authorized representatives of The City are to have the right at all reasonable times to inspect the railroad, and nothing in this franchise is to be deemed to diminish or affect the sanitary or police jurisdiction which the public authorities shall lawfully have over property in the City.

FOURTEENTH.—The Tunnel Company at its own expense is to maintain and strengthen all parts of the railroad which shall be under any street or avenue, so that the same shall safely support any structure superimposed thereon by the City.

FIFTEENTH.—In case the Tunnel Company assigns the franchise, every future owner is to expressly assume the obligations contained in the certificate.

SIXTEENTH.—The vault rights for which the Tunnel Company is to pay under the certificate of July 10th, 1902, in connection with its terminal station at Christopher and Greenwich streets, being no longer required by the Company, are not to be paid for.

This Board believes that it is for the interest of the public and of The City of New York that the necessary constitutional consents to the construction and operation of the said proposed railroad should be obtained as soon as possible.

IN WITNESS WHEREOF, the Board of Rapid Transit Railroad Commissioners for the City of New York has caused its official seal to be hereto affixed and these presents to be attested by its President and Secretary this 29th day of December, 1904.

THE BOARD OF RAPID TRANSIT RAILROAD
COMMISSIONERS FOR THE CITY OF NEW
YORK.

A. E. ORR, President.

BION L. BURROWS, Secretary.

[SEAL.]

The Board of Aldermen had not acted upon the proposition at the close of the year.

HUDSON AND MANHATTAN RAILWAY COMPANY.

The certificate granted by the Board to this company was approved by the Board of Aldermen and the Mayor late in December, 1903. On November 3d, 1904, the time of the company to obtain or receive the consents of property owners was extended for six months, the company stating that it had been unable to obtain such consents and that it proposed to apply to the Appellate Division of the Supreme Court at the earliest possible day.

In anticipation of the company being able to obtain the requisite consents the construction of the rapid transit subway station in Broadway between Dey and John streets has been so designed as to enable connection to be made by a passageway under Dey street whenever the tunnels of the Hudson and Manhattan Company are completed.

PENNSYLVANIA RAILROAD COMPANY.

The only action by this Board that has become necessary during the past year in reference to this large enterprise was the per-

mission given to construct a tramway from the terminal site at Ninth avenue in Manhattan through Thirty-second street to a pier on the North river. This tramway is intended only for the removal of excavated materials, and the transportation of material from the pier to the site of the terminal station for use in the construction thereof. The power of the Board to grant permission for the construction of such a temporary tramway, is expressly conferred by Section 33 of the Rapid Transit Act, which reserves the power to this Board to remove such tramway at any time.

III.

PROGRESS ON MANHATTAN-BRONX RAILROAD DURING 1904.

The chief event in connection with this railroad has been the opening to public use during the year of a large portion of it. It was the hope and expectation both of the Board and of the contractor that a part at least of the road would have been in operation during the summer, but owing to various causes and especially to strikes by various classes of workmen these expectations were defeated.

On September 23d, 1904, the Interborough Rapid Transit Company, the lessee of the road, formally notified the Board that the company would be prepared to open the subway for operation on the West Side from One Hundred and Forty-fifth street and Broadway to the Brooklyn Bridge on Thursday, the 27th of October. On receipt of this communication the Board adopted a resolution declaring the whole of Section 1 of the Rapid Transit Railroad ready for operation on and after Thursday, October 27th, 1904, and granting permission to the Interborough Company to open for operation so much of Sections 2 and 3 as were comprised in the portion which the company declared itself ready to operate.

Under the contract of February 21st, 1900, the term of the lease "shall be fifty years and shall run from the date on which

Section 1 shall be declared by the Board to be ready for operation." The lease therefore will expire on October 27th, 1954.

On the date fixed by the Interborough Company the road was opened to the public, after appropriate ceremonies in the City Hall, at which the Rapid Transit Commission formally announced to the Mayor the completion of the Rapid Transit Railroad for operation from the City Hall to One Hundred and Forty-fifth street, and the Mayor in the name of The People declared the railway open to that point. The first train over the road was run from the City Hall station, the Mayor himself operating the train.

A report of the proceedings at the City Hall is printed in the appendix.

Since the first portion of the road was opened other portions have been put in operation as follows: Along Broadway from One Hundred and Forty-fifth street to One Hundred and Fifty-seventh street, on November 5th, 1904; from Broadway and Ninety-sixth street under the Central Park and Lenox avenue to One Hundred and Forty-fifth street, on November 23d, 1904; and from the connection with the Manhattan Elevated Railroad in Third avenue near One Hundred and Forty-ninth street along Westchester avenue, Southern Boulevard and Boston Road in the Borough of The Bronx to One Hundred and Eighty-first street, on November 26th, 1904.

Since the dates above mentioned, the several portions of the rapid transit railway thus opened have been regularly operated and are carrying a steadily increasing number of passengers. Although there were at first some delays and inconveniences in operation, it is gratifying to record that the railway now appears to be worked with smoothness and regularity and with more and more satisfaction to the public. It is also a source of great gratification to note that although probably twenty millions of passengers had been carried up to the close of the year no very serious accidents to passengers had occurred. Several casualties among employes are probably due in large measure to a want of familiarity with the surroundings among which they work, and such accidents will doubtless become less frequent as the novelty wears off.

The Board feels that it has a legitimate cause of congratulation in the successful completion and operation of the greater part of this railroad, to the construction of which so much time and thought and money have been devoted. The work has been done for The City at the contract price, practically within contract time, and has never been delayed for an hour by an injunction or other legal proceeding. In its results, the road has proved itself to be perfectly adapted to the work for which it was designed, as it is capable of carrying in safety and comfort large numbers of people, at a speed heretofore unknown on intramural railways. It is no doubt true that in future roads marked improvements may be made. But the people of this City may be assured that they now own not only the best railway of its kind in existence, but one that is in many respects very far in advance of any heretofore built.

The only portions of the Manhattan-Bronx Rapid Transit Railroad which at the close of the year remain unfinished are: 'On the West Side, from One Hundred and Fifty-seventh street and Broadway to Kingsbridge, and on the East Side from Lenox avenue and One Hundred and Forty-third street under the Harlem River to the intersection of Brook avenue and Westchester avenue. The delay upon these lines is due in part to the changes in routes heretofore authorized by this Board and the municipal authorities in order to improve the alignment, and also to special difficulties in reference to crossing the Harlem River and the United States Ship Canal.

PAYMENTS FOR THE WORK.

The Engineer's report hereto appended sets forth fully the progress of the work of construction.

The total amount expended for work done and materials furnished under the contract up to January 1st, 1904, was.....	\$30,394,000
The total amount so expended during the year 1904 was	3,220,000

Making a total expenditure to date of	\$33,614,000
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SAFETY APPLIANCES.

Before the opening of the railroad the Board caused careful investigation to be made into the rolling stock and equipment which the Interborough Rapid Transit Company was required by the contract to furnish, with a special view to the safety of passengers.

In February, 1904, the Board received reports in regard to the cars with which the Interborough Company proposed to operate the road. These reports showed that the rolling stock represented the highest state of the art of car construction as then developed; but although they were suitable and satisfactory for use it was felt that only a car constructed completely of metal would entirely eliminate dangers from fire. Serious difficulties were thought to exist in the way of entire metal construction, and after some further investigation by the Board the general plans of the cars were approved, on March 10th, 1904.

The Board are very much gratified to find that the experiments which the Interborough Company promised to make in respect to the construction of all-metal cars have been entirely successful. A number of these cars are now in operation in the subway, and it is the intention of the Interborough Company to do away entirely with the use in the subway of cars constructed in any part of inflammable material as rapidly as the all-metal cars can be completed and put in operation. The subway will then be equipped with a much better type of rolling stock than is possessed by any other similar railway in the world.

Very careful attention was also given by the professional advisers of the Board to the system of signals and the method of protection of the third rail on the Rapid Transit Railroad, and the system was personally inspected and examined by the members of the Commission. In the result the signals and signal devices proposed were approved by the Board.

In the appendix will be found the reports from the engineers of the Board in reference to these various subjects.

COMPUTATION OF RENTAL.

The contract of February 21st, 1900, provided for the division of the Rapid Transit Railway into four sections, and that the payment of rental should begin in respect to each as soon as it was completed and ready for operation. These sections, however, did not agree with the portions of the road as they were in fact successively put into operation. The whole of Section I was embraced in the part of the road put in operation on October 27th, and portions of Sections II and III were also put in operation at that time. The whole of Section II is now in operation but portions of Sections III and IV are included in the parts which are still incomplete.

It therefore became necessary to adjust the questions of the mode of computing rental in respect to the successive parts of the road as they were completed. This was done by a supplemental agreement executed by the contractor and his sureties and dated November 3d, 1904. In effect it provides that the agreed percentage to be paid by the lessee shall be calculated upon such a proportion of the total cost of each section as the number of feet of single track in the part ready for operation bears to the total number of feet of single track in the section.

RETURN OF CONTRACTOR'S DEPOSITS.

Under the terms of his agreement the contractor was required to deposit with the Comptroller either in cash or in securities the sum of \$2,000,000 as security for construction. When the time approached for opening the railway to operation, the contractor represented to the Board the hardship of retaining so large a sum of money to secure the completion of work which was very nearly finished. The Board was advised that as a matter of law it had power in its discretion to return these deposits to the contractor notwithstanding the work was in some respects incomplete, and this view was confirmed by the Corporation Counsel upon reference of the subject to him. Accordingly the Board, on December 1st, 1904, determined to return these deposits to the contractor upon condition that the sureties upon the bonds,

including the Interborough Rapid Transit Company, would stipulate that they considered their responsibility extended to include any liability which would have been covered by the cash deposits if they had not been refunded. As the City holds bonds for \$5,000,000 for construction and has in addition the guarantee of the Interborough Rapid Transit Company and a lien upon all the power-houses, rolling stock and other equipment of the road, which is estimated to have cost over \$16,000,000 to the present time, it is apparent that no risk whatever will be incurred by the return of these deposits.

ADVERTISEMENTS IN STATIONS.

The contract for the construction and operation of the railway, as approved by the Corporation Counsel on October 11th, 1899, provides that:

“The contractor shall not permit advertisements in the stations or cars which shall interfere with easy identification of stations or otherwise with efficient operation.”

This clause was inserted in the form of contract prepared by the Board because it was believed to be the part of wisdom to offer all possible inducements to bidders to undertake the novel and hazardous work of building the railway proposed. It was thought that although it was extremely desirable to prohibit the use of advertisements in the stations, yet this consideration must give way to the more important consideration of securing a contractor. Every previous effort of the City had failed, and it was known that the largest railroad interests in the City did not believe in the feasibility of the plans of the Board.

Shortly after the railway was put in operation as above mentioned, large advertisements, in some cases coming down to the floor, were affixed to the walls of the stations by the firm of Ward & Gow, acting under an arrangement made between them and the Interborough Rapid Transit Company, the terms of which the latter have declined to communicate to the Board.

These advertisements were of strong colors, and if brought in close contact with the name tablets in the stations were thought to be likely to obscure them or confuse the eyes of the passenger.

In reporting upon this subject the Chief Engineer of the Board said:

"From a study of the operation of the road since its opening it is apparent that it is very much more difficult for passengers on the trains to locate the stations in the subway than it is on the elevated railroads, where passengers can recognize the locality from the surrounding buildings.

"Between stations in the subway there is nothing to warn the eye of the passenger what point he is approaching. Except for some peculiarities in the shape or color of stations which are not very apparent to unobservant or preoccupied people, the names on the station walls are the only means of identification. It is therefore most essential for the easy identification of stations that their names should be clearly visible.

"In order to furnish passengers with an identification of the stations, tablets in colored mosaic have been constructed in the walls of each station with the name of the station written out at length. In addition at intervals of about fifteen feet along the frieze line of the station small decorated faience have usually been inserted bearing the number or initial of the street. It would seem to me that in order that the stations may be quickly identified the name tablets and also the small tablets bearing the number of the street should at all times be quite free from neighboring advertisements so that they may stand out in bold relief. To do this a space of at least ten feet should be kept clear around the large name tablets and below the frieze line of the underground stations, and a small space of five feet from the small numbered tablets."

As it was asserted by some persons that this Board had no authority to permit any advertising and that it should take affirmative steps to cause the advertisements in question to be removed, the subject was referred to the Counsel to the Board, who expressed the opinion that the full duty of the Board would be performed if it took pains to see that such advertisements as were placed in and about the station platforms did not in fact "interfere with easy identification of stations or otherwise with efficient operation," leaving it to the lessee to defend itself in court against any attack which might be made by other persons upon its action

in reference to the sale of advertising privileges. During the months of November and December the Board has been endeavoring to arrive at some general understanding with the Interborough Company in reference to the places in the stations at which advertisements might be permitted without violating the terms of the contract. The difficulties in the way of an adjustment satisfactory to this Board seem to have been largely due to the fact that the Interborough Company had bound itself by some agreement with Messrs. Ward & Gow by which the Interborough Company was extremely hampered. It is hoped that a final and definite adjustment of the matter may be reached before the unfinished portions of the road are completed and officially accepted.

SEVENTY-SECOND STREET STATION.

At Seventy-second street and Broadway the entrance to the subway is through a separate brick building similar in general plan to the buildings by which access is gained to the Boston subway. At two other points in Broadway, One Hundred and Third street and One Hundred and Sixteenth street, similar buildings have been constructed. By the use of these buildings the booths for the sale of tickets and the toilet rooms are placed above the street level instead of below it, an arrangement which it is thought adds considerably to the public convenience. The objection to such buildings is that they occupy a good deal of space in the streets which can hardly be afforded in narrower thoroughfares than upper Broadway.

So far as the stations at One Hundred and Third street and One Hundred and Sixteenth street are concerned, the Board has heard no complaints, but so far as the Seventy-second street station is concerned it is a matter of regret to the Board that the residents of the neighborhood have objected strongly to the structure on the ground, first, that it is unsightly, and, second, that it is a source of danger owing to the fact that the surface cars pass very close to the door.

The latter difficulty has, it is believed, been entirely removed by constructing suitable guard rails. With the former difficulty the Board finds itself unable to deal. The building was constructed in

accordance with the plans of the Board, and it would be obviously impossible to require a contractor to undo this work at his own expense; nor would the Board be legally justified in expending the City's money for replacing the structure. If the structure is to be rebuilt, the cost of doing so must necessarily fall upon some other funds of the City than the fund provided for rapid transit construction.

STATION ENTRANCE THROUGH PRIVATE PROPERTY.

Reference was made in the last report to entrances to station platforms from private property, and it was stated that arrangements to this effect had been made in connection with the acquisition of rights of way at the Astor Place station, at the Grand Central station and the station at Forty-second street and Broadway.

The two former of these entrances are still incomplete owing to the fact that the buildings at those points are not yet ready for occupation. The entrance at Forty-second street and Broadway leads into the building of the *New York Times*, and has been in use since the opening of the subway in October.

On April 7th, 1904, the Board of Aldermen changed the name of the open space in front of the Times Building to "Times Square," and this Board in accordance with the new designation has determined to designate the station as "The Times Square Station."

The owners of that property having agreed to maintain an entrance through their building at all hours of the day and night and to keep it suitably lighted, the Board authorized the contractor to omit the building of one of the kiosks planned for the corner of Forty-second street and Broadway and agreed that no such kiosk should be constructed at that point so long as the entrance through the building was kept open in accordance with the agreements made.

At certain other points entrances to private property have been under discussion, and it is the desire of the Board so far as possible to do away in present and future subways with entrances that occupy the public streets. On April 14, 1904, the Board adopted a resolution to the effect that it would consent that entrances to stations from private property should be given free of charge

wherein the opinion of the Board such an entrance would be for the benefit of the travelling public and would not be for other reasons objectionable, provided that in all cases the expense connected therewith should be borne by the applicants, and provided further that such permit should be revocable by the Board or other legal authority acting in its stead for the City of New York.

SALE OF PROPERTY ACQUIRED FOR EASEMENTS.

By arrangement with the contractor the latter undertook to purchase certain parcels of private property through which the subway was designed to pass, and it was intended that after the construction of the road was completed through such parcels they should be sold subject to the easement for the maintenance of the road, and that the difference upon the re-sale should be paid to the contractor as the cost of the easements. This arrangement has undoubtedly resulted in a large saving to the City of the cost of securing a right-of-way through private property. During the year the greater part of the pieces of property thus acquired have been sold, and the Interborough Rapid Transit Company in a communication dated December 8, 1904, transmitted a statement showing a balance claimed to be due of \$334,692.31. This amount, added to payments aggregating \$354,300.39 theretofore made on account by the City, shows a total of \$688,992.70; but this sum is subject to certain deductions of comparatively small importance. Detailed figures in respect to these payments will be found in the reports of the Auditor of the Board.

WESTCHESTER AVENUE CONNECTION.

During the year the matter of this connection, intended to unite the rapid transit viaduct on Westchester avenue with the existing elevated railroad on Third avenue at One Hundred and Fortyninth street, was authorized by the Appellate Division of the Supreme Court. The work has been completed and trains are now in operation over this connection from the Third avenue elevated and are running over the Westchester avenue viaduct to the terminus near Bronx Park.

FORT LEE FERRY EXTENSION.

This extension was approved by the Board in October, 1903. It was intended to connect the viaduct on Broadway with the Fort Lee Ferry at the foot of Manhattan street, and as it involved the use of Manhattan street it was necessary to obtain the consents of the municipal authorities and the abutting property owners. The Board of Aldermen failed to act upon the proposal prior to January 1, 1904, at which time a new Board came into existence.

The Rapid Transit Board on January 7, 1904, transmitted a communication to the Board of Aldermen in reference to the subject, but no action was taken upon it during the year.

IV.

PROGRESS ON THE BROOKLYN-MANHATTAN RAIL-ROAD IN 1904.

The report of the Chief Engineer hereto appended sets forth fully the process of the work of construction of this road extending from near the entrance to the Brooklyn Bridge on Park Row down Broadway to the Battery, under the East River and along Joralemon and Fulton streets and Flatbush avenue to Atlantic avenue in Brooklyn.

The total amount expended for work done and materials furnished under the contract up to January 1, 1904, was \$202,457.06

The amount so expended during the year 1904 was \$620,425.62

Making a total expenditure to date of..... 822,882.68

This represents construction of the value of about \$4,114,413.40 the contract price being only about twenty per cent. of the actual cost of doing the work.

It is hoped that during the coming summer the road will be in operation as far as the Battery, making with the existing subway a complete railroad from one end to the other of the Borough of Manhattan on the west and a considerable distance northerly through the easterly side of the Borough of The Bronx.

During the progress of the excavation in State Street near the Battery Park, a stone monument was uncovered bearing the following inscription:

To perpetuate
The Site of the S. W. Bastion of
FORT GEORGE
in 40°, 42', 8", N. Latitude
as observed by
Capt. John Montresor, & David Rittenhouse
in October 1769.
The Corporation of the City of New York
have erected
This monument
A. D. MDCCCXVIII.

This interesting memorial has been carefully preserved by the engineers and will be re-erected at or close to the spot where it was found, upon a proper pedestal, and with a railing to protect it.

Through the kindness of The American Scenic and Historic Preservation Society, which has interested itself in the subject, the following account of the circumstances attending the original erection of the monument has been secured.

Fort George (which is not to be confounded with the fort near 190th Street and Eleventh avenue) was built upon the site of Fort Amsterdam, originally constructed in 1626. It occupied substantially the site of the new Custom House. In 1769, when the City was still under British rule, the Chamber of Commerce, at its own expense, caused the latitude of the "flag bastion" of the fort to be ascertained by Captain Montresor of the Royal Engineers and the celebrated Dr. David Rittenhouse, of Philadelphia.

On March 16, 1790, the demolition of Fort George was ordered to make room for the Government building which was designed to be the residence of the President of the United States. A part

To perpetuate
The Site of the S.W. Bastion of
Fort George
In $40^{\circ}42'8''$ N. Latitude
as observed by
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The Corporation of the City of New York
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This monument
AD. MDCCCXVIII.

STONE MONUMENT UNEARTHED IN STATE STREET NEAR BATTERY PARK.

of the material of the fort was used for filling up and enlarging the Battery Park, and all trace of the bastion was lost.

On June 10, 1817, Mr. John Pintard, Secretary of the Chamber of Commerce, sent to the New York Historical Society, the astronomical observations made by Dr. Rittenhouse and Captain Montresor, stating that he presumed they might "be considered of sufficient importance to be preserved in the archives." The Historical Society on the same day voted to apply to the Corporation of the City to ascertain the site of the bastion and to erect a monument with suitable inscriptions to mark the same. Mr. Pintard, Dr. John Griscom and Dr. Samuel L. Mitchell were appointed a committee to prepare the memorial to the Common Council and present it to that body.

The memorial, dated June 16, 1817, recited the facts here given and urged that the site be ascertained and perpetuated by a suitable monumental stone. It also called attention to the fact that "your magnificent City Hall has been erected considerably to the Northward of the place where Fort George formerly stood" and requested that its latitude also be accurately determined and marked.

Both of these recommendations were approved by the committee of Arts and Sciences of the Common Council, to whom the matter had been referred; and in the year 1817, a resolution was adopted by the Council directing the Street Commissioner to ascertain as nearly as possible the site of the Southwest bastion of Fort George, and to erect thereon a monumental stone on which should be marked the latitude as taken in 1769. This order, as appears from the inscription was duly complied with in 1818; and by a happy chance the monument is now to be restored for the information and instruction of our citizens.

As a matter of record, it may be here noted that the stone, when discovered was at a point twenty feet west of the centre line of State street and eight-seven feet north of the centre line of Bridge street, about two feet and nine inches below the surface.

JORALEMON STREET.

Very much to the regret of the Board the work of construction along this street has been seriously delayed. The work has been

prosecuted by means of a shaft sunk at the intersection of Joralemon and Henry streets through which excavating material is drawn up and the iron tubing and other materials for the work are lowered. This causes a complete interruption of traffic at the point in question, a very great annoyance to residents in the neighborhood. It is the expectation that early in the coming year a new shaft will have been opened at a point close to the East River and that the opening at Henry street will be closed and the pavement restored.

There has been very considerable settlement in some of the houses along the line of Joralemon street as the result of tunnel construction. The question of making compensation involves serious legal difficulties under the contract, and the Board has been advised by its counsel that in the present state of the law the City is not legally liable to the owners for the injuries they have sustained. If it is held by the Courts that the contractor and subcontractor are not liable, it is the hope of the Commission that a method may be found to extend relief to those who have been made to suffer. In view of the advantages which the whole community will enjoy and the great pecuniary benefit arising from the enhanced taxable value of property made available in the outlying portion of the City, it would seem but just that property owners along the line of the improvement should be indemnified for all physical loss which they have sustained.

The contractor, during the summer of 1904 agreed to make good repairs to the sidewalks and stoops if that would be satisfactory to owners. This, however, the owners were not disposed to agree to, fearing apparently that they might thereby waive some claims for damages which they would otherwise have. The contractor therefore proposes to restore the street, but it is understood that he will not consent to restore the stoops and other structures of the buildings, relying upon the case of *Haefelin v. McDonald* (96 App. Div. 213).

That case, it may be stated, was an action brought against the contractor under the Manhattan-Bronx contract for damages done to the plaintiff's property by the alleged negligent blasting of a

sub-contractor. The Court held that the contract made between the Rapid Transit Board and MR. McDONALD was not a contract for the plaintiff's benefit or enforceable by him, and created no liability on the part of MR. McDONALD to the plaintiff; and since the damage was claimed to have been occasioned by a sub-contractor's negligence that sub-contractor alone was responsible to the plaintiff. The opinions in this important case are printed in an appendix.

Under this decision, if the damage incurred by property owners along Joralemon street is due to the negligence of the sub-contractor, the Rapid Transit Subway Construction Company, which is the principal contractor with the City, is not liable. If the damage is due to defects in the plans and specifications for construction, which rendered the injury unavoidable, the contractor would not be liable directly to the property owner, but would be bound to indemnify the City in the event that the City should be itself held liable.

V.

LITIGATION.

Pipe Galleries.—As stated in the report for 1903, an ex parte injunction was granted restraining the Borough President of Manhattan from contracting for the construction of pipe galleries along lower Broadway in connection with the building of the subway. In January, 1904, a decision was rendered by MR. JUSTICE FITZGERALD continuing the injunction, based upon the ground that the authority of the Borough President in the matter of sub-surface structures was limited wholly to the construction of sewers, and did not extend to galleries for electric wires, cables, gas pipes, etc. This opinion is printed in the appendix.

Barney Suit.—MR. CHARLES T. BARNEY having been defeated in the State courts in his application to enjoin the City of New York and this Board from proceeding with the construction of the Rapid Transit Railroad under Park avenue, filed a bill in the Circuit Court of the United States for the Southern District of New York for the same purpose. This bill was dismissed by the Cir-

cuit Court for want of jurisdiction (118 *Fed. Rep.* 683) and the question certified to the Supreme Court of the United States. On March 21, 1904, the Supreme Court rendered its decision affirming the decree of the Circuit Court substantially upon the ground that the controversy was one to be dealt with by the courts of the State. (193 *U. S.*, 430).

The opinion by MR. CHIEF JUSTICE FULLER is printed in the appendix.

Park Avenue Deviation.—This Board in its report for 1903 stated that it had taken steps to validate the construction actually adopted for the easterly tunnel section on Park avenue between Thirty-third and Forty-second streets; that the action of the Board had been approved by the Board of Aldermen and the Mayor; that an effort to obtain the consents of property owners had been unavailing; and that Commissioners had been appointed by the Appellate Division of the Supreme Court to determine whether this part of the subway ought to be operated.

The proceeding before the Commissioners was very vigorously opposed by counsel for various property owners and a large quantity of testimony was taken. Counsel for some of the contestants were desirous that the Supreme Court Commissioners should undertake to demonstrate by experience whether the movement of trains in the subway would cause vibration in the houses of abutting owners. It was, however, impracticable at the time that the Commissioners were sitting, in May, 1904, to operate an experimental train, so that the Commissioners made their report under date of June 14 without having any actual information on this subject. Nevertheless, they reported that the easterly tunnel section ought to be completed and operated. A motion to confirm the report was made before the Appellate Division in November, 1904, but no action had been taken by that Court at the close of the year.

It is very gratifying to this Board to find that actual experiment demonstrates that no vibration is discoverable in any of the houses along the easterly line of Park avenue adjacent to the subway, and that the fears of property owners in this regard have proved to be quite unwarranted.

Haefelin vs. McDonald.—Reference has been made above in connection with the injuries sustained by property owners along Joralemon street, Brooklyn, to this important decision, the opinion in which is printed in full in the appendix. The case is an authority upon the general subject of the rights of abutting property owners under the Rapid Transit Act.

Underground Road Company's Suit.—This suit was begun in July, 1901, in the United States Circuit Court for the Southern District of New York by the Underground Railroad of the City of New York to enjoin the construction and operation of the Rapid Transit Railway authorized by this Board, and to enjoin the City from making payments to the contractor on the ground, among others, that the exclusive franchise for constructing and operating the railroad along portions of the route had been granted to the complainants. A demurrer to the bill was sustained by that Court (116 *Fed. Rep.* 952), and the complainants appealed from this decision to the Supreme Court of the United States. On March 21, 1904, the Supreme Court affirmed the decree of the Court below (193 *U. S.*, 416).

The opinion by MR. CHIEF JUSTICE FULLER is printed in the appendix.

CONDEMNATION PROCEEDINGS.

The following proceedings are now pending to acquire lands or easements for rapid transit purposes or have been referred to the Corporation Counsel with a request to begin such proceedings:

1. Proceeding to acquire easements in lands at Fourth avenue between Eighth and Ninth streets in the Borough of Manhattan. This proceeding was begun to acquire easements for rapid transit purposes, and subsequently the City authorities having authorized a change of the map or plan of the City and the widening of Fourth avenue at this point, a second proceeding was begun which was referred to the same Commissioners to acquire the surface for general City use. The testimony in this case is all in, and it is expected that the Commissioners will report at an early date.

2. Proceedings to acquire sub-surface rights along the line of streets in Brooklyn. This proceeding is necessary in the Borough of Brooklyn because the City there does not usually own the fee of the streets but only an easement for street use. Whether the construction of the rapid transit subway is or is not an ordinary street use is a question to be determined in the course of these proceedings. It is to be observed that in Massachusetts, the Supreme Court of that State in *Sears v. Crocker* (184 Mass., 586) held that the owner of land in which an easement for ordinary street use has been taken holds it subject to the right of the Legislature to appropriate the space below the surface, as well as upon it, in any reasonable way for the purposes of public travel without providing compensation. It was therefore held that abutting property owners in Boston were not entitled to an injunction to prevent the construction of the subway built through the public streets without a formal taking of the land in the streets. If this view is concurred in by the courts of the State of New York, nominal awards only can be made to abutting property owners in Brooklyn.

3. Proceedings to acquire sub-surface rights under the bulkhead and water grants at the foot of Joralemon street and the East River. This property is owned by the New York Dock Company, which has received grants of rights under water from the Commissioners of the Land Office. As the top of the tunnel will only be about twenty-seven feet below mean high-water at the existing bulkhead line, a claim has been made by the Dock Company that this would interfere with the use of their property for large vessels. Negotiations to acquire an easement through their property by agreement failed in consequence of the radical differences of opinion between the owners and this Board as to the compensation which ought to be made. As the top of the tunnel will be over fifty feet below mean high-water mark at the exterior line of the water grant of the Dock Company, it is apparent that it is only for a comparatively short distance from the bulkhead that the question of the depth of water is material.

4. Westchester avenue easements. This Board in June, 1900, adopted a resolution requesting the Corporation Counsel to begin proceedings to acquire the easements of light, air and access appurtenant to the property abutting on Westchester avenue, Southern Boulevard and Boston Road, which would be taken by the construction of a viaduct railway in front of these premises. These proceedings were suspended at the request of the Board to permit an effort to be made to obtain the consents of the property owners along the proposed route and the grant of their easements. Such consents and grants were obtained from the owners of upwards of sixty per cent. in length of the property.

On March 7th, 1904, the Corporation Counsel addressed the Board advising that condemnation proceedings should be begun before the road was in operation. The Board made some further efforts to obtain grants of easements, but finding these efforts unavailing adopted a resolution on June 16th, 1904, requesting the Corporation Counsel to proceed without further delay with the proposed condemnation proceedings.

On June 9th, 1904, the Corporation Counsel was requested to begin proceedings in reference to the property on Westchester avenue, between Third and Brook avenues, in front of which the connection with the Third avenue elevated railroad was built.

5. The construction of the viaduct north of Fort George on the West Side line involves the necessity of condemning easements of light, air and access along that road, and on June 16th, 1904, the Corporation Counsel was requested to begin such proceedings.

6. At the intersection of Flatbush and Atlantic avenues in the Borough of Brooklyn it became necessary to acquire a small triangle of land for purposes of a station. The property owners and the City being unable to agree upon the value of the property the Corporation Counsel under date of March 18, 1904, was requested to begin proceedings to condemn the property.

During the year, the proceeding to acquire easements of light, air and access on Broadway between One Hundred and Twenty-

second and One Hundred and Thirty-fifth streets has been practically completed. In a few instances the awards of the Commissioners were referred back to them by the Court for further adjustment. The awards as made average about \$64.18 per running foot on each side of the street. It is interesting to observe that although the part of the City here traversed is not yet fully built up and the buildings which have been erected are not of the most expensive or desirable character, the awards of damages are at the rate of over \$500,000 a mile, which adds so much to the cost of viaduct construction.

The proceeding to acquire lands in fee in the block bounded by Westchester, Brook and Bergen avenues and One Hundred and Forty-ninth street in the Borough of The Bronx has been completed. The payments for these awards will appear in the reports of the Auditor.

The proceeding to acquire a small parcel of land at the northeast corner of Worth and Elm streets in the City of New York for a station approach is also completed and the award has been paid, as will appear by the Auditor's report.

Respectfully submitted,

THE BOARD OF RAPID TRANSIT RAILROAD
COMMISSIONERS,

A. E. ORR, President.

BION L. BURROWS, Secretary.

APPENDICES TO REPORT
1904

RAPID TRANSIT COMMISSIONERS
AND
S T A F F

RAPID TRANSIT COMMISSIONERS

NAME	DATE OF ELECTION OR APPOINTMENT	REMARKS
Alexander E. Orr,	Appointed by Act of May 22, 1894. President N. Y. Chamber of Commerce, June 8, 1894. Elected President of the Board, June 8, 1894. Elected member of the Board, May 11, 1899. Re-elected President May 23, 1899.	Resigned June 8, 1894. Term of office expired May 5, 1899. Now in office.
John H. Starin,	Appointed by Act of May 22, 1894. Elected Vice President, May 28, 1895.	Now in office.
William Steinway,	Appointed by Act of May 22, 1894.	Died November 30, 1896.
Seth Low,	Appointed by Act of May 22, 1894. Mayor, Jan. 1, 1902.	Resigned June 11, 1896. Term of office expired Dec. 31, 1903.
John Claflin,	Appointed by act of May 22, 1894. Elected Treasurer May 28, 1895. Re-elected Member of Board, Dec. 27, 1901.	Resigned May 11, 1899. Now in office.

RAPID TRANSIT COMMISSIONERS—*Continued*

NAME	DATE OF ELECTION OR OR APPOINTMENT	REMARKS
Thomas F. Gilroy,	Mayor, June 8, 1894.	Term of office expired Dec. 31, 1894.
Ashbel P. Fitch,	Comptroller, June 8, 1894.	Term of office expired Dec. 31, 1897.
John H. Inman,	Elected June 8, 1894.	Died Nov. 5, 1896.
William L. Strong,	Mayor, Jan. 1, 1896.	Term of office expired Dec. 31, 1897.
Woodbury Langdon,	Elected November 19, 1896.	Now in office.
George L. Rives,	Elected November 19, 1896.	Resigned Dec. 27, 1901.
Charles Stewart Smith,	Elected Dec. 10, 1896.	Now in office.
Robert A. Van Wyck,	Mayor, Jan. 1, 1898.	Term of office expired Dec. 31, 1901.
Bird S. Coler,	Comptroller, Jan. 1, 1898.	Term of office expired Dec. 31, 1901.
Morris K. Jesup,	President N. Y. Chamber of Commerce, May 5, 1899.	Now in office.
Edward M. Grout,	Comptroller, Jan. 1, 1902.	Now in office.
George B. McClellan,	Mayor, Jan. 1, 1904.	Now in office.

STAFF OF THE COMMISSION

NAME	DATE OF ELECTION	REMARKS
Wm. Barclay Parsons,	Chief Engineer, June 18, 1894.	Resigned Jan. 1, 1905.
Henry R. Beekman,	Counsel, June 18, 1894.	Resigned Jan. 1, 1895.
Albert B. Boardman,	Counsel, June 18, 1894.	
Parsons, Shepard & Ogden,	Counsel, Jan. 1, 1895.	Firm dissolved, Jan. 1, 1902.
Tracy, Boardman & Platt (now Boardman, Platt & Soley),	Counsel, Jan. 1, 1895.	
Edward M. Shepard,	Counsel, Jan. 1, 1902.	Succeeding Parsons, Shepard & Ogden. Resigned Mar. 1, 1904.
George L. Rives,	Counsel, March 1, 1904.	.
Lewis L. Delafield,	Secretary, June 18, 1894.	Resigned June 1, 1899.
Bion L. Burrows,	Secretary, June 1, 1899.	
H. A. D. Hollman,	Auditor, May 10, 1900.	
James Dolan,	Messenger, June 28, 1894.	

APPENDIX II

PROCEEDINGS AT THE OPENING
OF THE
RAPID TRANSIT RAILWAY
OCTOBER 27, 1904

PROCEEDINGS ON THE OCCASION OF THE OPENING OF THE RAPID TRANSIT RAILWAY.

The ceremonies took place in the Aldermanic Chamber, City Hall, at 1 P. M., on the 27th day of October, 1904.

Promptly at 1 o'clock Mayor McClellan led a procession into the chamber and to reserved seats near the presiding officer's seat. He walked with Archbishop Farley, and following them came President Fornes of the Board of Aldermen, with Coadjutor Bishop Greer; President Orr, with Father Lavelle, of St. Patrick's Cathedral; John H. Starin, with ex-Mayor Van Wyck; Comptroller Edward M. Grout, and Deputy Comptrollers J. W. Stevenson and N. Taylor Phillips; Morris K. Jesup, Woodbury Langdon, John Claflin, Charles Stewart Smith, August Belmont, John B. McDonald, William Barclay Parsons, Edward M. Shepard, Albert B. Boardman, George L. Rives, George S. Rice and H. A. D. Hollmann. These were followed by several of the officials of the Interborough Rapid Transit Company, led by Vice-President E. P. Bryan.

PRESIDENT CHAS. V. FORNES rapped for order and made a brief address, saying in part:

We have assembled in the Legislative Hall of The City of New York to rejoice in the execution of a great project; to turn aside from the avocations of our everyday life and accord a just tribute to the energy and ability of those of our citizens who so successfully prosecuted this work to completion. No man, however able, no combination, however resourceful, could have accomplished this undertaking unless sturdily backed and unfalteringly supported by this great municipality. It is fitting and proper, my fellow citizens, that upon this occasion a prayer of thanksgiving should go up to the throne of Almighty God and a supplication for His continued guidance.

BISHOP GREER offered prayer, and then Mr. Fornes yielded the chair to Mayor McClellan.

THE MAYOR said:

Without rapid transit Greater New York would be little more than a geographical expression. It is no exaggeration to say that without interborough communication Greater New York would never have come into being.

The present boundaries of our city included ten years ago a multitude of independent and heterogeneous communities, which would have continued, in all human probability, to work out their own destinies independently had it not been that modern genius and modern enterprise afforded their population the possibility of movement.

When the Brooklyn Bridge was opened Greater New York was born. Every addition to transit facilities has added to her growth, which can only reach its full development when a complete system of rapid transit shall be rapid in fact as well as in name.

Every step in the direction of interborough communication benefits, not only the borough immediately affected, but benefits the city as a whole. The constant shifting of population among the boroughs, acting and reacting upon them, results in the increase of the population of all.

We have met here to-day for the purpose of turning over a page in the history of New York; for the purpose of marking the advent of a new epoch in her development. If this new underground railroad which we are about to open proves as popular and as successful as I confidently expect it to be, it will be only the first of many more which must ultimately result in giving us an almost perfect system of interborough communication. When that day arrives borough boundaries will be remembered only for administrative purposes, and New Yorkers, forgetting from what part of the city they come and only conscious of the fact that they are the sons of the mightiest metropolis the world has ever seen, will be actuated by a common hope and united in a common destiny.

Where so many have done so much and done so well, it would be futile and invidious to distinguish among those to whom praise is due. When Fame inscribes her list of those who have deserved well of the city, she must include the names of all who have had to do with this work, whether of the Chamber of Commerce, commissioners, financiers, engineers, or contractors, for all have served the public faithfully and well.

But the greatest honor and the greatest glory are due to the spirit of the people themselves, without which this work would never have been undertaken, and without which it could never have been brought to a successful conclusion.

MR. PARSONS, on being introduced by the Mayor, said:

I have the honor and very great pleasure to report that the Rapid Transit Railroad is completed for operation from the City Hall Station to the station at One Hundred and Forty-fifth street, on the west side.

PRESIDENT ORR said:

MR. CHAIRMAN—On behalf of the Rapid Transit Commission, whom I have the honor to represent, I congratulate you, and through you the people of New York, upon the successful completion of a large part of the first division of the great work confided to our care a few years ago. I think it is unnecessary to occupy your time in speaking of the subway which you are about to open to the public, as it will so soon speak for itself, and in a manner which I believe will carry conviction to every one who investigates it or enjoys its benefits, that it is in the line of an ideal system of local passenger transportation for this City, and indeed I may add for all large cities where time, comfort and safety are considered essentials.

Nor do I wish to dwell upon the difficulties we encountered at the outset in attracting to this method of civic transit interests then identified with municipal passenger transportation, or with railroad enterprise, or of capitalists seeking investments, many of whom even declined to examine our plans and specifications, and, with a single notable exception, freely expressed the opinion that failure would be the outcome of our efforts; except to say

that a more liberal sentiment now prevails, and that like difficulties will not again be encountered in the further prosecution of subway development.

Nor is it our wish to refer to the distressing inconveniences, and in too many instances actual personal loss, which some of our fellow citizens incurred during the process of construction, except to give the assurance that these drawbacks will be greatly minimized in the future, and to express the hope that a kindly consideration will be extended to those who have been made to suffer through the installation of this great public good. It is impossible to construct a work of this character so near the street surface, without causing more or less inconvenience, if not positive loss, to residents along its line, but in view of the advantages secured to the many, and the great pecuniary benefit the City will enjoy through enhanced taxable revenue from outlying places made accessible, this municipality should be generous enough and big-hearted enough to see to it that those who suffer should be indemnified for all physical loss without being compelled to seek a precarious relief through the medium of expensive and vexatious lawsuits. It is not the spirit of American citizenship to desire to profit by such unavoidable misfortunes of our neighbors when reasonable and just compensation can be brought within easy reach.

But my contact with this great work has suggested some thoughts which I trust may not be considered inappropriate to refer to on this eventful occasion.

It is unnecessary to argue, for I think it must now be apparent to every thoughtful mind, that among the most valuable assets a large city can possess are to be classed its franchise rights. This opinion has not always prevailed either here or in the cities of the old world, and as a consequence, many of New York's franchise rights have been disposed of without giving due consideration to future possibilities, which, if under her control to-day, would be of incalculable value. I use the word "incalculable" advisedly, for it is very safe to say that in things American it is impossible to forecast the future for a single generation, indeed I might say for a single decade. Will any one undertake to picture the New York of thirty years hence? In each of the civilized countries

of later years there is only one great metropolitan city, largely the result of improved methods of national transportation, and all roads lead up to it in which are centered the culture, the refinements and the wealth of the nation. Just as London is the metropolis of Great Britain and Paris of France, so is New York the metropolis of the United States. I know we have many large and growing cities, but if we are true to ourselves and do not overlook or recklessly cast aside our opportunities, this country of ours, great as it is, can only have one New York. With the growth of the City its franchise rights proportionately increase in value, and hence the need of their periodic readjustment so that the City may enjoy from time to time its fair proportion of the increase it helps to create. I do not wish it to be understood that I mean franchise rights should be denied to carefully considered enterprises at their fair value when applied for, for enterprise stimulates development; but enterprise should not object to pay at fixed periods of future readjustment its fair proportion of the increase predicated on the conditions as they will then exist, else the errors of the past, which in the light of to-day, we now deplore, would fail of correction. Who could have foretold twenty-five years ago that one of our most important railroad systems would make application to enter this City in tunnels under the streets at a depth below their surface which would not interfere with any present or perspective street purpose, and agree to pay for the privilege an annual rent per linear mile of single track greater than the annual net earning power per mile of almost any steam railroad in the United States; and who will undertake now to estimate what will be the fair value of that franchise privilege twenty-five years hence which is secured to the City through the introduction into the agreement of a provision for readjustment at the end of that period? It is an imperative obligation resting upon those endowed with the authority to grant franchise rights to protect not only the present but also the prospective values of these most important assets.

And I am also led to believe that subway construction under municipal ownership is only in its first stage of development. Every city is divided into two great sections, the business and the residential, and the larger the city the further these sections will be apart and passenger transportation an important factor. Sur-

face railroads are serviceable for short distances, and will always have their place, but they are not applicable to long distance street travel. At best they are an aggregation of grade crossings, subject to continual interruptions which cannot be obviated, nor can dependence be placed upon reaching a destination at a given time.

It cannot be denied that elevated railroads have proved of inestimable value in hastening the City's development, and also a great personal convenience as to time, but they are unsightly in appearance, interfere with light and ventilation in the congested streets, in many instances injure the value of abutting property, and at times are subject to serious delays through atmospheric changes. I question whether further elevated railroad building will have many advocates in the future except in sparsely inhabited outlying territory or for bridge approaches, or that it would have been advocated, in the first instance, if the electric conditions of to-day had then obtained. In subway passenger service all these objectionable features are eliminated, and the promised "Harlem in fifteen minutes," and other places in proportion via subway transportation, has passed beyond the realm of conjecture and become an established fact.

I also desire on behalf of the Commission to express the hope that in future subway construction the City will make provision for the installation of pipe galleries along the routes. It is true that these pipe galleries are not in any way a rapid transit requisite, and are, therefore, outside of the province of the Commission to construct, but they could be put in place at a minimum of cost during the process of tunnel excavation, would prevent the inconvenience of continual street disturbance in the future, and would, we believe, prove a profitable source of revenue to the City in proportion to their cost. It has always been a regret to the members of the Commission that permission could not be obtained to install pipe galleries in new Elm street and lower Broadway during subway construction by way of practically demonstrating the convenience and revenue to be derived from such a system.

In conclusion I beg the privilege of mentioning a few names in connection with this subway enterprise which I trust New York will always hold in grateful remembrance.

When, in 1894, the Chamber of Commerce, that time-honored guardian of the commercial interests of this City and State, realizing the need of enlarged local transit facilities as a means of retaining the prominence New York had already acquired, and of insuring its continual growth, earnestly advocated the building of subways through which electric trains could be run at high rates of speed, they adopted the plan of municipal ownership which the late Abram S. Hewitt, when Mayor of this City in 1888, had urged without success. Happily Mr. Hewitt was one of the Chamber's most prominent members, and, guided by his intelligent supervision, and assisted by the late Judge Henry R. Beekman, the Chamber formulated the present Rapid Transit Act, under which, with a few subsequent amendments, the Rapid Transit Commission is now operating. It is unnecessary at this time to enumerate its provisions, they are pretty generally known, but when this City is in the full enjoyment of its own system of rapid transit, a system not confined to one or two localities, but so comprehensive as to embrace the whole of Greater New York, which will transport its citizens from any station point to any other station point for a single fare (as I firmly believe will be the ultimate result), which will increase municipal revenues through the development of places that are now comparatively waste, which will help to safeguard to New York her well-earned position as the financial and commercial centre of the United States, and all this at a mere bagatelle of cost to the treasury of the City, then, and not till then, will the genius of Mr. Hewitt and the enterprise and energy of the Chamber of Commerce be fully understood.

Viewed from the standpoint of to-day it is a singular fact that only a little more than four years ago subway construction under municipal ownership was regarded with suspicion and distrust by those largely identified with local and national passenger transportation, and as far as I have been able to discover, with the single notable exception referred to above, by the prominent financiers of that period. If it had rested with the men controlling these great interests, I think I am justified in saying that municipal rapid transit would yet remain an unsolved problem. It is, therefore, with a feeling somewhat akin to gratitude that the Commission makes record of the fact that on January 15, 1900,

John B. McDonald, neither a railroad man nor a financier, but a contractor, identified with large undertakings, after making a careful study of the situation, had the courage of his convictions and made an acceptable tender for the franchise contract and lease, which the Commission were empowered to grant. Immediately after the contract was awarded, August Belmont became associated with Mr. McDonald and organized the Rapid Transit Subway Construction Company, by whom the subway has been built. That the work has been rapidly, admirably and willingly performed is certified to by our Engineer Corps, and when public inspection is made, evidences of refinement, comfort and safety will be observed, which are not to be found anywhere in like structures. I am not in the confidence of Messrs. McDonald and Belmont as to the present or prospective financial outcome of their undertaking, but I am sure I express the hope of the members of the Commission, and of every New York citizen that their courage and enterprise may reap a very generous reward.

It is more than an ordinary pleasure to be able to certify to a service having been admirably and successfully rendered. This is the certificate of approbation the Commission on this happy occasion tenders to its Chief Engineer, William Barclay Parsons. Mr. Parsons was elected to his prominent position the day the Commission organized, and at decided personal sacrifice has remained its Chief Engineer ever since. The members of the Commission realized at the outset what I may call the gravity of the confidence reposed in them by the Rapid Transit Act, and it is a very great pleasure to them to testify in this public manner how promptly Mr. Parsons' engineering skill and energy helped to lighten that responsibility. The Commission is responsible for the subway route. They were controlled in a measure by the amount of money at their disposition and by the previous findings of the Appellate Division of the Supreme Court, but the merit of the plan of construction and its supervision from beginning to end is Mr. Parsons' alone. When we consider its twenty-four miles of length, running through some of the busiest and most congested sections of the City, the nature of the ground, largely of rock formation, the superstructures to be carried, consisting in most part of water

and gas-mains and surface railroads (the operating of which latter was not suspended for a single day), the difficult sewerage problems involved, and then the final result, it is not to be wondered at that Mr. Parsons' professional reputation has passed beyond the confines of his native city, and received well merited national and international recognition. I never returned from any of my visits to the subway during the progress of the work without being more and more impressed with the magnitude of the engineering difficulties presented and the magnificent manner in which they were being overcome. As long as this subway is made to render service to the people of New York, the Chamber of Commerce, Abram S. Hewitt, John B. McDonald, August Belmont and William Barclay Parsons should be held in remembrance as household words.

It is also a pleasure to express our appreciation of the support and encouragement we continually received from the local press, and especially in the early days, when it was so much needed. It proved an incentive to earnest and determined action on our part, and for all we return very grateful thanks.

And now, Mr. Mayor, on behalf of the Commission, I beg to give you official notice that it is our judgment the subway may be safely opened for passenger traffic from the City Hall station to the station on the Western Division at One Hundred and Forty-fifth street; and further, that it is expected, in a very few weeks, the Eastern Division will be ready for operation as far as the station at Lenox avenue and One Hundred and Forty-fifth street. It is too early yet to estimate when the subway will be completed to its northern terminal points, although the Commission is satisfied Mr. McDonald and the Rapid Transit Subway Construction Company are doing all in their power, in the face of very adverse circumstances, towards this desirable end.

I may also add for general information that we fully expect the portion of the Brooklyn Division, situated between the City Hall Park and the South Ferry, will be ready for operation some time during the coming summer. It is already well progressed without having seriously interfered with the street traffic of lower Broadway.

VICE-PRESIDENT JOHN H. STARIN spoke as follows:

MR. CHAIRMAN:—In this world of disappointment the realization of the fondest wish of a later life is given to but few men. Fully mindful of this fact, I rejoice with you to-day at the successful outcome of the great work the completion of which we are here to celebrate.

For over fifteen years I have wished and hoped and striven and labored for the result which has now at last been realized. The struggle has not always been an easy one for my associates or for myself, and now, when the victory has been fully won, we think it is not out of place to briefly review the work which we have accomplished.

In April, 1889, Mayor Hugh J. Grant, in conformity with the law, appointed a Board of Rapid Transit Commissioners, consisting of these five members: August Belmont the elder, John H. Starin, O. B. Potter, William Steinway and Woodbury Langdon.

The first meeting of this Commission was held on April 23, 1890, at the private residence of Mr. Belmont, who was elected its President, and during that spring and summer a number of meetings were held. The labor of the Commission included an examination of the existing elevated road, the construction of a viaduct through blocks and an underground system under streets. The members made personal examination of all the important streets, generally by walking, and a thorough acquaintance with the existing conditions was acquired by careful observation.

On June 20, 1890, a communication was addressed to Mayor Grant, informing him of the obstacles the Commission had met with under the law exempting so many streets as to make it impossible to locate routes for rapid transit that would be of benefit to the public. Despite this, however, a route was adopted extending as far as the law would permit, and, curiously enough, the route selected was identical with that which is now completed from the City Hall to Forty-second street.

Early in 1891 an amendment to the Rapid Transit Law was enacted, and the Board was reorganized and reappointed by the Act, the members being: William Steinway, President; John H.

Starin, Vice-President; Samuel Spencer, John H. Inman, and Eugene L. Bushe.

Our citizens were determined, and the Legislature by repeated amendments to the original Act, prepared the way for the execution of the will of the majority. In 1894 the Rapid Transit Act was remodeled and a new Board of Commissioners established. These Commissioners so selected to enforce the will of the people were Alexander E. Orr, John H. Starin, Seth Low, John H. Inman, William Steinway, John Claffin, and, ex-officio, Mayor Strong and Comptroller Fitch.

The routes and plans of the former Commission were readopted, and in November submitted to the people for a vote for or against municipal construction. Over 90,000 majority voiced the sentiment of the citizens and laid the foundation upon which our improved transit facilities are now established.

On August 6, 1896, the Board passed a resolution directing their engineer to submit routes and a general plan to conform to the requirements of the court as to cost. On November 5 of that year the engineer's report was received. The routes and plans submitted not proving satisfactory, the Commissioners at the following meeting determined on the routes and plans which constitute the present system, and which were formally adopted on February 4, 1897, and on February 17 submitted to the Common Council.

Following the lamented deaths of Commissioners Steinway and Inman, Woodbury Langdon and George L. Rives were meanwhile elected to succeed them, and Mayor Van Wyck and Comptroller Coler succeeded the former city officers of the Board. The plans of this Commission, like previous routes and plans, had to obtain the approval of the courts. This approval, by the Appellate Division, was given on the 17th day of December, 1897, but the stipulation requiring a bond of \$15,000,000, the small margin of the City's available funds and the more recent events which are familiar to all, held this grand undertaking in abeyance for two years.

From an examination of the records of the Commission up to this time one can secure but a meagre idea of the real labors of the several members. Conclusions which appear form but a skeleton. Volumes would be required to enumerate the details. The imagi-

nation must suffice to furnish an estimate of the great bulk of arduous work performed by these members that rapid transit for the people, by the people, might not perish, but become a living reality throughout the city. It was slow in coming, but the commencement came at last when the Board, on my resolution, accepted the bid of John B. McDonald to do the work which, thank God, he has since done so well.

Since the execution of the contract between the City and Mr. McDonald, on the 21st of February, 1900, the work of construction has been carried on entirely under the supervision of this Commission. The Board has continued, with only a few changes in its membership, practically as at that time, and I may safely say that it has been as devoted to its work as if the railroad was being constructed with the money of its members. Winter and summer, in season and out of season, it has met both as a full Board, of which hundreds of sessions have been held, and in committees, of which the meetings are without number. And at all times its members have given a patient and expert care and attention to every question, no matter how trivial, which might in any way affect the quality and value and usefulness of the great railroad system which is to-day thrown open to the public.

Of the Board as appointed in 1894, two Commissioners, as already stated, have been lost by death. Seth Low resigned from the Board prior to the execution of the first contract and subsequently served in an ex-officio capacity for two years. The three places thus made vacant were filled by the selection of Woodbury Langdon, Charles Stewart Smith and George L. Rives, who were all members of the Board at the time of the execution of the contract, Mr. Rives afterward resigning to become Corporation Counsel.

As ex-officio member of the Board Alexander E. Orr, who was first named in the Act of 1894 individually, subsequently became a member by virtue of his office as the President of the Chamber of Commerce, to be succeeded by Morris K. Jesup on his succession to the latter office, Mr. Orr remaining a member and President of the Board by appointment on the resignation of John Claflin, who afterward returned to the Board on the resignation of Mr. Rives. Mayor Thomas F. Gilroy and Comptroller Ashbel

P. Fitch were the City's first ex-officio members. They were succeeded by Mayor Van Wyck and Comptroller Bird S. Coler, who were members of the Board at the letting of the first contract. They were in turn succeeded by Mayor Seth Low and Comptroller Edward M. Grout, Mayor Low finally surrendering his place on the Board to our present Chief Executive, Mayor George B. McClellan.

Since the signing of the first contract in 1900, a great revolution in public opinion has taken place regarding city travel. My mind goes back easily to the time when the Commission of 1891 first came to the conclusion that underground rapid transit was the only cure for the ills which travelling New Yorkers were heirs to. In those days the number of persons who believed in an underground construction was most limited; indeed, it might have been comprised in a list made up of the Commissioners themselves, their engineers and assistants, and a very few others who had given the matter some study. Even among those who in the few subsequent years came to believe that such a plan was feasible and desirable there were few sanguine enough to expect its construction, and to come down to 1900, even after the contract was signed, many could be found who said they did not expect to live to ride on such a road.

No sooner had the first great work been well started than the Board confidently laid out a second one to bind together with Manhattan, by a subway and tunnel under the East river, the great sister borough of Brooklyn, which, by consolidation, had become a part of the Greater City and over which the powers of the Board had been extended by Legislative enactment. So thoroughly had the value of the underground idea been demonstrated, even at this time, in January, 1902, that a contract was secured by the Board for the City upon surprisingly favorable terms, and the Rapid Transit Subway Construction Company contracted to build the new line for \$3,000,000, although its total cost will undoubtedly reach \$10,000,000.

And almost coincident with the inauguration of this second task, which was in September, 1902, came the great project of the Pennsylvania Railroad Company, for a vast cross-town tunnel system, even surpassing in financial magnitude the first one.

Now on all sides we hear demands for roads of similar construction.

So the great work was commenced, and so it has gone on. That it has been successful beyond the fondest anticipation of its early advocates is cause for universal rejoicing. But in the midst of that rejoicing let us not forget the men who have fought the battle and won the victory. Let us remember McDonald, the contractor, and Belmont, the capitalist, and William Barclay Parsons, the engineer, and above all and beyond all let us remember Alexander E. Orr, the President of the Rapid Transit Commission.

MR. JOHN B. McDONALD spoke as follows:

MR. MAYOR, MR. PRESIDENT AND GENTLEMEN:

I thank you, my friends, for your cordial reception.

The Rapid Transit Subway of New York City has been discussed so thoroughly that another word is hardly necessary to bring it freshly before the public. There are some subjects, however, which seem to invite further attention.

First—The inception of this great work years ago, when the question of devising means to relieve the congested traffic of New York City was first taken up. Many, if not all, of the master minds which evolved this great undertaking are now but memories in this great city. Theirs was the pioneer work; it involved intricate Legislation and the education of the public to a realization of their wants and the possibilities which might be accomplished. The task was not an easy one, and great credit is due to these men of affairs of that date and period.

Second, came the study of the problem from an engineering as well as a commercial standpoint. This consumed many years and was a herculean task, presenting difficulties and conditions not met elsewhere in all the world.

The narrow island of Manhattan, bisected by its streets, filled with water, gas and heating mains, electric ducts, pneumatic tubes, sewers, surface and elevated railways, and with its buildings constructed on foundations varying from shifting sand below the tide line to hard and seamy rock rising to high altitudes, and with the Harlem river interposing on its north line, all these were ob-

stacles which the engineer had to meet and conquer. It has been done.

The discussion and final building of the subway has been coincident with an evolution in public affairs in New York as marked as this great work. The City has grown from a population of 1,500,000 to 3,500,000, the buildings from six to thirty stories, and commercially The City of New York now stands in the front rank in the world.

When the final work of preparation had been concluded and the Rapid Transit Commission had formulated their specifications, prepared their plans and advertised for proposals, my work began. It would be rank conceit to say that I did not approach this great undertaking with many misgivings as to my ability to accomplish the task, but I believed it practicable, necessary to the City, and after careful study determined to become a bidder for the work; after fair competition the contract was awarded to me.

The work of organizing and giving a bond for the faithful performance of my contract finally resulted in bringing to my aid the distinguished financier, Mr. August Belmont, and his associates, and the organization of the Rapid Transit Subway Construction Company, whose generous support and co-operation I have had in carrying out this important work.

In the subdivision of the work there were brought to my aid as sub-contractors, men of means, ability and experience not surpassed. What greater compliment can I pay them than to say: "Behold their work!"

A corps of engineers representing the Rapid Transit Subway Construction Company was organized to co-operate with and assist the engineers of the Rapid Transit Commission in executing the work involved in this great problem. To their skill, fidelity and untiring zeal I pay my sincerest tribute.

To the Chief Engineer of the Rapid Transit Commission and his associates, who are responsible for the plans upon which this great work has been constructed, and to whose skill has been added tact and good judgment in an unusual degree, there is due the highest praise and commendation.

To the members of the Rapid Transit Commission I owe and tender my most profound thanks. I have found them uniformly

fair in their dealings, broad in their views and faithful to a public trust of great magnitude, passing unscathed through the critical inspection of the great public without, so far as I know, one unfavorable comment; of few public men can this be said.

For the municipal officers of The City of New York I have only the deepest gratitude. They have aided and encouraged me under all circumstances, smoothing away and making easy rough places.

To the press of New York, that censor of public opinion, which has not only helped me by the truthful representation of facts, but by discouraging untimely and unwarranted statements, I am under lasting obligations.

To the citizens of New York, the men who have borne almost without complaint the inconveniences which the construction of the subway has necessitated, all praise is due. I scarcely believe that their patience and forbearance have been or will be equalled elsewhere, but I trust that the result will amply repay you all.

MR. AUGUST BELMONT spoke as follows:

We are here to celebrate the completion of a great enterprise. If my financial associates and myself are entitled to credit it should be properly limited to our part in the undertaking. All identified with it may, I think, to a limited extent, properly boast, as they now put off the harness which they girded on in no spirit of overconfidence a few years ago.

There is enough credit in the completion of such an undertaking to go around. To the Rapid Transit Commissioners for their part in evolving a plan; to the Legislative and Executive departments of this municipality, which urged, and to the members of the Legislature of The State of New York and to its Executive, who made possible the enactment of the requisite laws; to Mr. Parsons, who was responsible for the preparation of the engineering plans; to Mr. McDonald, who was the successful bidder for the contract; to Mr. Bryan, Mr. Hedley, Mr. Deyo, Mr. Stillwell, Mr. Gibbs, and Mr. Van Vleck, the able staff responsible for the best equipment and power house in existence; to Mr. Andrew Freedman, who was among the first to appreciate the practicability of the project, as well as to the financial interests involved,

should be awarded their fair distributive shares of praise and credit for the courage, patience, industry and intelligence that unitedly have carried this work to completion.

Attempts to install an underground system of railroads in the City of New York began many years ago. There had been some legislation and even some work prosecuted under such legislation, but the legislation and the work alike were inoperative. Until the present project was conceived, no real progress was made. Although much time and thought had been wasted upon these previous attempts the resulting failures did not, as is frequently true of failure, furnish any suggestions for the guidance of those entering upon what, to all intents and purposes, was a wholly new undertaking.

Almost insurmountable difficulties stood in the path of the enterprise. The questionable right of the City to incur the obligations necessary to be assumed upon its part, the uncertainty as to the legal rights of abutting owners, the difficulties of carrying the subway through soil occupied by innumerable obstructions of pipes and wires, the fact that the work had to be prosecuted without interference with the operation of surface transportation lines and general surface traffic, which required the uninterrupted use of the thoroughfares under which the subway was to be constructed—all combined to give pause even to the most pronounced enthusiasm.

Nor did the solicitude as to success end with the decision to proceed. At all points in the progress of the work great care was at all times requisite lest by unwise counsel and decisions, either in the physical or financial prosecution of the work, there might result a collapse which would doubtless have deferred indefinitely the completion of a work so essential to the municipal well-being of this metropolis, whose true development was hemmed in by the rivers at its very threshold.

It was only by exhaustive preparation in almost infinite detail, both in the engineering and in the transportation and in the financial departments, that it has been possible for this enterprise to proceed to a successful termination without serious interruption or embarrassment and with credit to all identified with it.

If any especial credit is due to my associates and myself, it is that the financial end committed to our care required the exercise of a kind of a courage not frequently demanded for an investment. It was a new and untried venture. No one had yet been willing to assume the risk in order to enjoy the possible resulting benefits and profits. The dangers attending its undertaking were clear and unmistakable, nor was the outcome guaranteed by any experience upon which it was possible to rely. It was essential before a decision to go forward could be reached, to eliminate, as far as possible, all apparent elements of probable failure.

With all this I am entitled to add, I think, and I add it with no inconsiderable pride, the initiation and prosecution of the work have not evolved any excessive capitalization. The capital represented by the par of the stock issued, together with the obligations issued by the City, represents substantially the cost of the investment for construction, equipment and installation of the subway and the railway.

It is my judgment, too, that the claim is not extravagant that the plan for and the execution of this work have set an example which can fitly serve as an object lesson and a standard for similar quasi-municipal projects.

In this case The City of New York was, by appropriate legislation, authorized to extend its credit by the issue of municipal securities, for the building of the subway, but that was the limit of its participation. Even this risk was reduced to a minimum, because municipal securities were to be issued and the proceeds devoted to the payment for the subway only as results, rigidly required by contracts, were forthcoming from the contractor.

The City had, before entering upon the undertaking, a substantial guarantee of performance by the contractor. Added to this protection there was demanded a much more substantial guarantee, not only that the interest upon these securities to be issued by the City would be met, but that, through the accumulation of a sinking fund to be provided by the private interests, the total municipal capital invested would be ultimately repaid. In the end, the subway, constructed at the expense of the City, will be re-delivered to it free from obligation.

At a time when there are so many ill-digested and ill-considered plans under discussion, having for their object not only municipal ownership, but municipal operation of transportation lines, the State of New York has reached the true solution of this problem—that municipal participation is justified to the extent of furnishing credit for the construction of such a work, but should stop short of the operation of the property when constructed. To private interests should be committed the risks and the burden as well as the profit of constructing, equipping and operating the road, the latter not being within the governmental functions or other legitimate province of municipality.

That the enterprise in its results has been conspicuously successful should be the subject of cordial congratulation by all citizens. These congratulations should not exclude a due recognition to those who imperiled, not only large sums of money, but reputations—whether that reputation was professional, or commercial, or financial—in what was not only a new, but what might easily have been a hazardous undertaking.

I think I am entitled to take you frankly into my confidence and say that nothing in my career has given me greater pause than the question as to whether I should permit my firm to assume financial leadership in this undertaking. It was not alone on account of the large sums of money it was necessary for me personally to risk in the new venture. Comparatively, that was not of first importance. for it was essential in a work as vast as this to secure extensive co-operation on the part of other financial interests, entitled morally to look to me in large degree for its success, which no preliminary investigation, however comprehensive and intricate, could assure with absolute certainty.

My associates and myself, however, had complete confidence in the exhaustive preliminary investigation, conducted at great length and with great care, and having assured ourselves that the work could be completed within the estimates, we were willing without hesitation to assume the further risk, supposed by many at the time to be the main risk, that the growth of The City of New York would be insufficient to justify the providing of these new facilities for transportation.

Now that the work has been completed and the subway, or, rather, this splendid arcade, is formally opened, although not a passenger for hire has yet been carried upon its tracks, being entirely assured of the success of this enterprise, we have in contemplation plans for still further adding to the rapid transit facilities of the system of elevated and subway lines now united.

This great metropolis has now rid itself of the bonds that heretofore have limited and impeded its growth, and has included within itself, in all but legal description, a vast adjacent territory.

To all who have contributed toward such a result this must always be a permanent satisfaction and pride.

May I now add this thought? As this subway is now dedicated to the public, shall we not avail of still another opportunity and pledge ourselves to see to it that in this Greater City, now made possible by the construction of the model public work, there shall be a lasting and an increasing civic pride which shall be the type and the standard for the municipalities of this land, and perhaps of other lands.

Benediction was pronounced by ARCHBISHOP FARLEY.

Thereupon, at 2:24 P. M., the Mayor said:

Now I, as Mayor, in the name of The People, declare the subway open.

MR. BELMONT then walked to the chair and handed to the Mayor a mahogany case, saying:

"I give you this controller, Mr. Mayor, with the request that you put in operation this great road, and start it on its course of success, and, I hope, of safety."

After requesting every one to remain seated while the officials passed out, Mayor McClellan declared the meeting adjourned, and the audience, headed by the special guests, left the City Hall for the loop station, there to board the first train. The first train started at 2:34 P. M. from the City Hall station.

APPENDIX III

OPINIONS OF THE COURTS

SUPREME COURT.

COUNTY OF NEW YORK.

DILLON

v.

CANTOR

SPECIAL TERM.

FITZGERALD, J.—Section 469 of the Greater New York Charter, subdivision 5, devolves upon the Commissioner of Water Supply, Gas and Electricity, the control, among other things, “of the use and transmission of gas, electricity, pneumatic power and steam for all purposes in, upon, across, over and under all streets, roads, avenues, parks, public places and public buildings; of the construction of electric mains, conduits, conductors and subways in any such streets, roads, avenues, parks, and public places.” Among the purposes of the contract, the proposed awarding of which by the President of the Borough it is sought to restrain, the following is set forth in the third paragraph of the specifications. “3. It is the intention of these drawings and specifications to provide for constructing of the galleries as shown for all pipes, electric wires and cables and all other subsurface structures, excepting sewers. * * *” The authority of the President of the Borough in the matter of subsurface structures is limited wholly to sewers (chap. 461, Laws 1901, secs. 469, 528, 531; *People ex rel. Consolidated Subway v. Monroe*, 85 App. Div., 542, affirmed 176 N. Y.). Motion granted. Settle order on notice.

SUPREME COURT OF THE UNITED STATES.

THE UNDERGROUND RAILWAY OF THE CITY OF NEW YORK
AND THE RAPID TRANSIT UNDERGROUND RAILROAD
COMPANY, APPELLANTS,

v.

THE CITY OF NEW YORK, ROBERT A. VAN WYCK, INDIVIDUALLY AND AS MAYOR OF THE CITY OF NEW YORK,
BIRD S. COLER, ET AL.

MR. ROGER FOSTER for appellants.

MR. EDWARD M. SHEPARD, MR. GEORGE W. WICKERSHAM and MR. DE LANCY NICOLL for the Rapid Transit Board, John B. McDonald and others, respondents.

MR. GEORGE L. RIVES and MR. THEODORE CONNOLY for The City of New York and other respondents.

MR. CHIEF JUSTICE FULLER delivered the opinion of the Court:

This was a bill filed on behalf of the Underground Railroad of The City of New York and the Rapid Transit Underground Railroad Company, corporations organized under the laws of New York, against The City of New York, the Mayor, the Comptroller and the Rapid Transit Commissioners of New York, and contractors engaged in the construction of an underground railway and subway in that city, all of the State of New York, to enjoin payment for work done and further construction. The bill was demurred to for the reason, among others, that the Circuit Court was without jurisdiction in that the averments of the bill did not present a case arising under the Constitution or laws of the United States, which was the sole ground on which jurisdiction was invoked. The demurrer was sustained and the bill dismissed for want of jurisdiction, 116 Fed. Rep. 952, and, the question of jurisdiction being certified, the case was brought directly to this Court.

If, on the face of complainants' statement of their own case, it does not appear that the suit really and substantially involved a dispute or controversy as to the effect or construction of the Constitution, on the determination of which the result depended, the Circuit Court was right and its decree must be affirmed. *Defiance Water Company v. Defiance*, 191 U. S. 184, and cases cited.

The bill refers to the rapid transit acts of 1891 (Laws 1891, c. 4), 1894 (Laws 1894, c. 752), and 1895 (Laws 1895, c. 529), and sets forth their provisions for a rapid transit board empowered to construct an underground railroad in The City of New York; for the submission to the electors of the City of the question whether there should be municipal construction of railroads; for the power of the board, in case a majority vote favored municipal construction, to grant the right to maintain and operate the municipal railroad for not less than thirty-five years nor more than fifty years; for the advance by the City of the funds to construct the railroad; for the borrowing of money and the issuing of bonds therefor; for the laying out of the routes and the adoption of the plan of construction by the Board; for the requisite consent of the local authorities, consisting of the Mayor and Common Council, and of a majority in value of the abutting owners, or, in lieu thereof, of the Supreme Court of the State; for the various steps of procedure after the popular vote in favor of municipal construction; and for details of the contract for the construction and operation of the municipal road.

The bill further alleges that the Rapid Transit Board had determined on the construction of an underground railroad; that the local authorities have duly given their consent and that the Appellate Division of the Supreme Court has, on application of the Board, appointed three commissioners to determine whether the railroad ought to be constructed and operated; that said commissioners have duly determined that it ought to be; that their determination has been duly approved by the Court, and has been taken in lieu of the consent of the property-owners; that The City of New York, the municipal authorities and Board have entered into a contract, February, 1900, with defendant contractors, to

construct the road over the routes determined on, and that the railroad is now in process of construction, and large sums of money have been paid out by the City therefor.

But it is asserted that the complainants had a prior exclusive right under contract with the State to the use for underground railroad purposes of the streets now sought to be used for the municipal rapid transit road, and that the legislation is in conflict with the Fourteenth Amendment, and Section 10 of Article II. of the Constitution.

No rights created by the Constitution are asserted, and if the facts set up by complainants are, as matter of law, wholly inadequate to show possession of contract rights as between them, or either of them, and the State, then no dispute or controversy arises in respect of an unconstitutional invasion of such rights.

The bill avers that the Underground Railroad of The City of New York, one of the complainants, was formed August 21, 1896, by the consolidation of the Central Tunnel Railway Company, the New York and New Jersey Tunnel Railway Company, and the Terminal Underground Railway Company, as to the two latter of which no claim is made and no question arises.

And it alleges that the Central Tunnel Company was organized March 26, 1881, "under the so-called General Railroad and Tunnel Law of the State of New York, namely, chapter one hundred and and forty of the Laws of 1850, and of the various acts amendatory of and supplemental to the same, and chapter five hundred and eighty-two of the Laws of 1880."

That company's articles of association declared its purpose to be "constructing and maintaining and operating a railroad for public use in the conveyance of persons and property."

Chapter 140 of the Laws of New York of 1850, as amended by chapter 133 of the Laws of 1880, provided that railroad corporations formed under it should possess in addition to "the powers conferred on corporations in the third title of the eighteenth chapter of the first part of the Revised Statutes" (which did not include power to construct railroads or to the use the streets of a city), the power "to construct their road across, along, or upon any * * * street, highway, * * * which the route of its road shall intersect or touch. * * * Nothing in this act contained shall

be construed * * * to authorize the construction of any railroad not already located in, upon or across any streets in any city, without the assent of the corporation of such city." Laws 1850, p. 211; Laws 1880, p. 242.

By chapter 10 of the Laws of 1860 it was provided: "It shall not be lawful hereafter to lay, construct or operate any railroad in, upon or along any or either of the streets or avenues of The City of New York, wherever such railroad may commence or end, except under the authority and subject to the regulations and restrictions which the Legislature may hereafter grant and provide" (Laws 1860, p. 16), which was carried forward into the Charter of The City of New York of 1882. Laws 1882, c. 400, section 1943. This was held by the Court of Appeals to render the general railroad act inapplicable to The City of New York. *Matter of Washington, &c., Railroad Company*, 115 N. Y. 442.

The Constitution of the State contained by amendment adopted in 1874, the following provision:

"But no law shall authorize the construction or operation of a street railroad except upon the condition that the consent of the owners of one-half in value of the property bounded on, and the consent also of the local authorities having the control of that portion of the street or highway upon which it is proposed to construct or operate such railroad, be first obtained, or in case the consent of such property-owners cannot be obtained, the General Term of the Supreme Court, in the district in which it is proposed to be constructed, may, upon application, appoint three commissioners, who shall determine, after a hearing of all parties interested, whether such railroad ought to be constructed or operated, and their determination, confirmed by the Court, may be taken in lieu of the consent of the property-owners."

This was continued by the Constitution of 1894, which changed the words "General Term" to "Appellate Division," and the word "district" to "department."

The Court of Appeals ruled in *People v. O'Brien*, 111 N. Y. 1, that in order for a railroad corporation to acquire authority to construct or operate a railroad upon the streets of any municipality, not only the consent of the municipal authorities was indispensable, but that they were empowered to grant such consent on such terms and conditions as they chose to impose.

The first section of chapter 582 of the Laws of 1880 provided:

"Whenever such road, or any part of the same, is intended to be built within the limits of any city or incorporated village of this State, and to run by means of a tunnel underneath any of the streets, roads or public places thereof, the said company, before building the same underneath any of said streets, roads or public places, shall obtain the consent of the owners of one-half in value of the property bounded on the line, and the consent of the Board of Trustees of the village by resolution adopted at a regular meeting and entered on the records of said Board, and of the proper authorities having control of said streets, roads or public places; or in case such consent of the owners of property bounded on the line cannot be obtained, the General Term of the Supreme Court in the district in which such city or village is situated may, upon application, appoint three commissioners who shall determine, after a hearing of all parties interested, whether such railroad ought to be allowed to be built underneath said streets, roads and public places, or any of them, * * * and the determination by said commissioners, confirmed by the Court, may be taken in lieu of the consent of said authorities and property-owners." Laws 1880, p. 872.

In matter of New York District Railway Company, 107 N. Y. 42, decided in 1887, the Court of Appeals held that street underground roads were street railways and that the constitutional provision applied to them; that the act of 1850 had no application to street railroads, and, if it had, the authority to construct had been taken away by the act of 1860; and that the provision of the act of 1880, allowing the action of the Supreme Court commissioners to stand in the place of the consent of the municipal authorities was unconstitutional, and also as to the consent of the abutting owners, because indivisible; but that perhaps the act might stand as authority for the construction of an underground street railway on condition of the assent of the city authorities and the half of abutting values, rejecting all the provisions for the appointment of commissioners.

It follows that the Central Terminal Company could have acquired no right to build the proposed railroad without the consent of the municipal authorities and the consent of the abutting property-owners, yet no such consents are asserted to have been given it, and the contrary appears on the face of the bill. But

after setting forth the provisions for a Rapid Transit Board by the Rapid Transit Act of 1891, as amended, especially in 1894, and the proceedings thereunder, which showed that the consent of the municipal authorities and of the Supreme Court in lieu of the property-owners had been given to the municipal construction sought to be enjoined, the bill argues that the determination and consents in favor of such municipal construction amounted to authority to construct the railroad of the Central Tunnel Company because it was an underground railroad, which it had been proposed should occupy the same route or part of it, notwithstanding the railroad of that company had not been consented to by either the local authorities or the abutting property-owners or the Supreme Court acting for them.

We quite agree with the Circuit Court that this contention is wholly inadmissible. The determination of the Rapid Transit Board and the consents of the municipal authorities and the abutting owners to municipal construction could not be regarded as enuring to the benefit of private parties who had endeavored to acquire the franchise twenty years before, and had failed to perform the conditions essential to the right to construct such a road.

The bill also avers that the consent of the abutting property-owners could not be obtained by the Central Tunnel Company, and that the company applied to the General Term of the Supreme Court for the appointment of three commissioners, and that on February 2, 1883, commissioners were appointed, one of whom declined to serve, whereupon the Court appointed another commissioner, who also declined to serve; that the company thereupon applied for another appointment, and "said application was duly granted by said Court"; but that the said General Term and its successor, the Appellate Division, had not yet entered said order, and that, by reason of the inaction of the Supreme Court, the Central Tunnel Company and its successor, the Underground Railroad Company, had not been able to continue the proceedings before Commissioners, and neither of said corporations had been able to commence the construction of its line of railroad. If this imputation of laches could in any view be entertained it is enough to say that the General Term in 1886 adjudged the act of 1880,

under which the application was made, to be unconstitutional in respect of obtaining consents, *Matter of New York District Railroad Company*, 42 Hun, 621, and, as already mentioned, this decision was affirmed by the Court of Appeals. 107 N. Y. 42.

The General Railroad Law of 1850 provided for the filing of a map and profile of the proposed route, and this was done by the Central Tunnel Company, March 28, 1882, and the bill claims that thereby the company obtained a contract right. But the mere filing of a map and profile by a company incorporated under that law could not give an exclusive right to the occupancy of the space included in such map and profile as against the State. In some instances it might give priority as between railroad corporations, whose corporate existence had not lapsed for non-construction, but only until the Legislature otherwise provided. And so it was held in *People vs. Adirondack Railway Company*, 160 N. Y. 225, where, among other things, it was observed: "There is no property in a naked railroad route, existing on paper only, that the State is obliged to pay for when it needs the land covered by that route for a great public use, and its officers are authorized to act by appropriate legislation." The judgment was affirmed by the Court in *Adirondack Railway Company vs. New York State*, 176 U. S. 335, and we said:

"But the capacity to acquire land by condemnation for the construction of a railroad attends the franchise to be a railroad corporation, and when unexecuted cannot be held to be in itself a vested right surviving the existence of the franchise or an authorized circumscription of its scope." * * *

"We agree with the Court of Appeals, as has already been indicated, that the railroad company occupies no position entitling it to raise the question. The steps it had taken had not culminated in the acquisition of any property or vested right."

Where certain routes have been determined according to law, and the necessary consents have been obtained, and real estate has been acquired by condemnation, the situation would be entirely different. *Suburban Rapid Transit Company v. Mayor*, 128 N. Y. 510. But without the consents the right to construct and operate could not become vested. In *matter of application of the Rochester Electric Railway Company*, 123 N. Y. 351.

The Underground Railroad, one of the complainants, was, as before stated, formed by the consolidation of the Central Tunnel Company with two other companies under chapter 676 of the Laws of 1892, which provided for the consent of the proper city authorities and of the owners of one-half in value of the abutting property, or, as to the latter, the determination of Commissioners affirmed by the Supreme Court. Neither of these consents is alleged to have been obtained.

It is averred, however, that the company paid, when its articles of consolidation and in corporation were filed in August, 1896, the incorporation tax of one-eighth of one per cent, on its capital stock, required to be paid by chapter 908 of the Laws of 1896; but the payment of a tax for the privilege of being a corporation did not carry with it the right to occupy any street of New York with its proposed railroad.

And the fact, also asserted, that this company filed a map or profile did not, as we have seen, in itself create a contract right.

The company is alleged to have leased its road to the Rapid Transit Underground Railroad Company, the other complainant, which was incorporated in 1897, subject to the Rapid Transit Law of the State and the Railroad Law under which it was incorporated. The consent of the municipal authorities and the consent of the abutting property owners, or the substituted consent of the Supreme Court, were essential to the right to construct a railroad, and these it never obtained. It paid the incorporation tax under the Tax Law of 1896, but that gave no right of construction, nor did its filing of a map or profile. There is also an averment that this company "paid taxes duly assessed against it by the City, County and State of New York," but none that any tax was paid on the right to construct a railroad in the streets of New York.

The result is that it appeared on the record that complainants possessed no contract rights, which were impaired, or of which they were deprived, and that the suit did not really and substantially involve a dispute or controversy as to the application or construction of the Constitution.

We, therefore, do not deem it necessary to further unfold the convolutions of this lengthy bill. Many matters attacking the validity of the Rapid Transit acts, and the proceedings in municipal construction thereunder, were put forward, but we are not called on to consider them in view of the conclusion that the Circuit Court did not acquire jurisdiction.

Decree affirmed.

(Reported 193 U. S. 416.)

SUPREME COURT OF THE UNITED STATES.

CHARLES T. BARNEY, Appellant,

v.

THE CITY OF NEW YORK, THE BOARD OF RAPID
TRANSIT RAILROAD COMMISSIONERS et al.

This was a bill to enjoin The City of New York, the Board of Rapid Transit Commissioners for New York, John B. McDonald and the administratrix of Shaler, deceased, from proceeding with the construction of the rapid transit railroad tunnel under Park avenue, New York, adjacent to the premises of Charles T. Barney, "until the easements appurtenant thereto shall have been acquired according to law and due compensation made therefor to complainant"; and from constructing such railroad otherwise than in accordance with the routes and general plan adopted and approved by the local authorities and by the owners of abutting property, or the Appellate Division of the Supreme Court in lieu thereof.

From the bill it appeared that the Rapid Transit Board had, on behalf of the City, devised routes and general plans, and entered into a contract for the construction of a rapid transit railroad with McDonald, of whom Ira A. Shaler was a sub-contractor, under the Rapid Transit Acts of the State (Laws 1891, c. 4; Laws 1892, cs. 102, 556; Laws 1894, cs. 528, 752; Laws 1895, c. 519; Laws 1900, c. 729; Laws 1901, c. 587; Laws 1902, cs. 533, 542, 544, 584).

Park avenue was one of the streets under which the railroad was authorized to be built, and the routes and general plan of the

road were prescribed by the board by resolutions of January 14 and February 4, 1897, which received the assent of the local authorities and of the Appellate Division of the Supreme Court in lieu of the consent of the abutting property owners.

Complainant alleged that he "consented to the construction of the said rapid transit railroad in accordance with the said routes and general plan of construction, and did not oppose the proceedings hereinafter mentioned, which the said Board of Rapid Transit Railroad Commissioners instituted for the purpose of obtaining the determination of three commissioners appointed by the said Appellate Division that such rapid transit railroad ought to be constructed and operated; nor did your orator oppose the confirmation of said determination by the said Appellate Division."

But complainant averred that the portion of the railroad under Park avenue and in front of his premises was being built twenty-seven feet nearer to his premises than was authorized by the Routes and General Plan; and that the work was "being thus performed by said defendant, McDonald, and the said Shaler without any authority other than certain directions given by the chief engineer employed by the Board of Rapid Transit Commissioners and embodied in certain so-called working drawings, or detail drawings, prepared by him or at his instance, and recently approved informally by said board. And * * * that the fact that such directions had been given by the chief engineer and that said work was being thus performed by the contractor, as aforesaid, was not until recently specifically known to said board; that such action of said chief engineer and contractor has never been formally or specifically approved by said board; that there has been no change made or authorized by said board in the said 'Routes and General Plan,' nor has there been any modification of the contract or specifications with reference to the construction of that part of the tunnel lying under Park avenue, between Thirty-third and Forty-first streets; that no notice was given to any of the property owners along said street that it was proposed by the defendants or any of them to change the position of the tunnel to any material extent from the position shown and described in the said 'Routes and General Plan,' nor was any opportunity ever given to said

property owners or the citizens generally to be heard with respect to any such change."

Complainant further averred "that at none of the times herein mentioned did the said Board of Rapid Transit Railroad Commissioners have authority (if at all) to enter into any contract for the construction of any rapid transit railroad under or upon the said Park avenue, except in accordance with the said 'Routes and General Plan' contained in the said resolutions of January 14 and February 4, 1897, and that at no time did the said board have authority to prepare detailed plans and specifications, except (if at all) in accordance with the said general plan of construction or to alter any plans or specifications prepared by them, excepting in accordance with said general plan of construction. That the act of the said board in permitting the defendants McDonald and the said Shaler to enter upon that part of Park avenue between Thirty-third and Forty-first streets where the tunnel is now in process of construction, as aforesaid, was illegal and unauthorized, and the defendants McDonald and the said Shaler have entered upon the same unlawfully and without authority; and for the further reason that the construction of the rapid transit railway on the easterly side of Park avenue in front of your orator's said premises, takes his property without due process of law, in violation of the provisions of the Fourteenth Amendment to the Constitution of the United States, and that said rapid transit act, so far as it purports to authorize the construction of a tunnel and railway in said Park avenue without the consent of abutting owners or compensation therefor, is void, because it deprives your orator of his property without due process of law, in violation of the provisions of the said amendment."

On the bill and affidavits, complainant moved for an injunction pendente lite, and defendants resisted the motion, submitting, in pursuance of stipulation, affidavits filed in their behalf in the case of *Huntington v. City of New York* and others, the same defendants, since brought here, and argued with this case. The opinion in that case, 118 Fed. Rep. 683, was adopted in this, and the court of its own motion, under section 5 of the act of March 3, 1875, c. 137, entered a decree dismissing the bill for want of jurisdiction, and certified that question to this court.

MR. MAXWELL EVARTS and MR. ARTHUR H. MASTEN for appellants.

MR. EDWARD M. SHEPARD for the Rapid Transit Board, respondents.

MR. PLATT A. BROWN and MR. DE LANCEY NICOLL for John B. McDonald, respondent.

MR. CHIEF JUSTICE FULLER delivered the opinion of the Court:

The jurisdiction of the Circuit Court was invoked upon the ground that by the tunnel construction sought to be enjoined, complainant was deprived of his property without due process of law, in violation of the Fourteenth Amendment. But that amendment prohibits deprivation by a State, and here the bill alleged that what was done was without authority and illegal.

The City acts through the Rapid Transit Board, which possesses the powers specifically vested. It is empowered to prescribe the routes and general plan of any proposed rapid transit railroad within the City, and every such plan must "contain such details as to manner of construction as may be necessary to show the extent to which any street, avenue or other public place is to be encroached upon and the property abutting thereon affected." Consents of the municipal authorities and the abutting property owners to construction on the routes and plans adopted must be obtained, and any change in the detailed plans and specifications must accord with the general plan of construction, and, if not, like consents must be obtained to such change.

The bill asserted that the easterly tunnel section under Park avenue was not within the routes and general plan consented to, and that the construction was unauthorized. And this is the view taken by the Supreme Court of New York. *Barney v. Rapid Transit Board*, 38 Misc. Rep. 549; *Barney v. City of New York*, 39 Misc. Rep. 719; *Barney v. City of New York*, 83 Appellate Division Rep. 237.

Thus the bill on its face proceeded on the theory that the construction of the easterly tunnel section was not only not authorized, but was forbidden by the legislation, and hence was not

action by the State of New York within the intent and meaning of the Fourteenth Amendment, and the Circuit Court was right in dismissing it for want of jurisdiction.

Controversies over violations of the laws of New York are controversies to be dealt with by the courts of the State. Complainant's grievance was that the law of the State had been broken, and not a grievance inflicted by action of the legislative or executive or judicial department of the State; and the principle is that it is for the State courts to remedy acts of State officers done without the authority of or contrary to State law. *Missouri v. Dockery*, 191 U. S. 165; *Civil Rights Cases*, 109 U. S. 3; *Virginia v. Rives*, 100 U. S. 313.

In *Virginia v. Rives*, referring to an alleged denial of civil rights on account of race and color in the empaneling of a jury, the laws of Virginia in respect of the selection of juries appearing to be unobjectionable, Mr. Justice Strong, speaking for the court, said :

"It is evident, therefore, that the denial or inability to enforce in the judicial tribunals of a State, rights secured to a defendant by any law providing for the equal civil rights of all persons citizens of the United States, of which section 641 speaks, is primarily, if not exclusively a denial of such rights, or an inability to enforce them, resulting from the constitution or laws of the State, rather than a denial first made manifest at the trial of the case. In other words, the statute has reference to a legislative denial or an inability resulting from it.

"When a statute of the State denies this right, or interposes a bar to his enforcing it, in the judicial tribunals, the presumption is fair that they will be controlled by it in their decisions; and in such case a defendant may affirm on oath what is necessary for a removal. Such a case is clearly within the provisions of sec. 641. But when a subordinate officer of the State, in violation of State law, undertakes to deprive an accused party of a right which the statute law accords to him, as in the case at bar, it can hardly be said that he is denied, or cannot enforce, "in the judicial tribunals of the State the rights which belong to him. In such a case it ought to be presumed the Court will redress the wrong. If the

accused is deprived of the right, the final and practical denial will be in the judicial tribunal which tries the case, after the trial has commenced. If, as in this case, the subordinate officer whose duty it is to select jurors fails to discharge that duty in the true spirit of the law; if he excludes all colored men solely because they are colored; or if the sheriff to whom a venire is given, composed of both white and colored citizens, neglects to summon the colored jurors only because they are colored; or if a clerk whose duty it is to take the twelve names from the box rejects all the colored jurors for the same reason, it can with no propriety be said the defendant's right is denied by the State and cannot be enforced in the judicial tribunals. The Court will correct the wrong, will quash the indictment or the panel, or, if not, the error will be corrected in a Superior Court. We cannot think such cases are within the provisions of sec. 641. Denials of equal rights in the action of the judicial tribunals of the State are left to the revisory powers of this Court."

In the Civil Rights cases, in which the Court was dealing with the act of March 1, 1875, 18 Stat. 335, c. 114, Mr. Justice Bradley said:

"In this connection it is proper to state that civil rights, such as are guaranteed by the Constitution against State aggression, cannot be impaired by the wrongful acts of individuals, unsupported by State authority in the shape of laws, customs, or judicial or executive proceedings. The wrongful act of an individual, unsupported by any such authority, is simply a private wrong, or a crime of that individual; an invasion of the rights of the injured party, it is true, whether they affect his person, his property, or his reputation; but if not sanctioned in some way by the State, or not done under State authority, his rights remain in full force, and may presumably be vindicated by resort to the laws of the State for redress."

There are many cases in this Court involving the application of the Eleventh Amendment which draw the distinction between acts of public officers *virtute officii*, and their acts without lawful right, *colore officii*; and in *Pennoy v. McConnaughy*, 140 U. S. 1, Mr. Justice Lamar defined the two classes to be, those brought

against officers of the State as representing the State's action and liability, and those against officers of the State when claiming to act as such without lawful authority. The subject is discussed at length and the cases cited in *Tindal v. Wesley*, 167 U. S. 204, and *Fitts v. McGhee*, 172 U. S. 516. Appellant's counsel rely on certain expressions in the opinion in *Ex parte Virginia*, 100 U. S. 339, but that was a case in which what was regarded as the final judgment of a State Court was under consideration, and Mr. Justice Strong also said: "Whoever, by virtue of public position under a State government deprives another of property, life, or liberty, without due process of law, or denies or takes away the equal protection of the laws, violates the constitutional inhibition; and as he acts in the name and for the State, and is clothed with the State's power, his act is that of the State."

And see *Manhattan Railway Company v. City of New York*, 18 Fed. Rep. 195; *Kiernan v. Multnomah County*, 95 Fed. Rep. 849; *In re Storti*, 109 Fed. Rep. 807.

Scott v. McNeal, 154 U. S. 34, and *Chicago, Burlington and Quincy Railroad Company v. Chicago*, 166 U. S. 226, are cited by appellant, but in those cases judgments of the highest judicial tribunals of the State were treated as acts of the State, and no question of the correctness of that view arises here

And so in *Reagan v. Farmers' Loan and Trust Company*, 154 U. S. 362, the General Assembly of Texas had established a railroad commission and given it power to fix reasonable rates, with discretion to determine what rates were reasonable. The act provided that suits might be brought by individuals against the commission "in a court of competent jurisdiction in Travis County, Texas," and a citizen of another State sued them in the Circuit Court of the United States for the district which embraced Travis County, and this was held to be authorized by the State statute.

And as the establishment of rates by the commission was the establishment of rates by the State itself, and the determination of what was reasonable was left to the discretion of the commission, their action could not be regarded as unauthorized, even though they may have exercised the discretion unfairly.

Similarly in *Pacific Gas Company v. Ellert*, 64 Fed. Rep. 421, where a public board was given power to improve streets, and proceeded in excess of its powers but not in violation of them, its action was regarded by Mr. Justice McKenna, then Circuit Judge, as State action.

In the present case defendants were proceeding, not only in violation of provisions of the State law, but in opposition to plain prohibitions.

Section 5 of the act of March 3, 1875, 18 Stat. 470, c. 137, provided that if in any suit in the Circuit Court it should appear, to the satisfaction of the Court, at any time, that the suit did not really and substantially involve a dispute or controversy properly within its jurisdiction, the Court should proceed no further, but dismiss the suit. The last paragraph of this section was in terms repealed by the act of March 3, 1887, 24 Stat. 552, c. 373, re-enacted August 13, 1888, 25 Stat. 433, c. 866 (the part repealed not being material here), but otherwise the section remained and remains in full force.

This case went off on the motion for preliminary injunction, and the bill was properly dismissed, whether treated as if heard on demurrer, or on the proofs by affidavit.

Decree affirmed.

Arabella D. Huntington, Appellant, v. The City of New York et al.

THE CHIEF JUSTICE—This case is governed by the decision just announced, and the decree is accordingly affirmed.

(Reported 193 U. S. 430.)

SUPREME COURT.

APPELLATE DIVISION.

JOSEPH A. HAEFELIN, Appellant.

v.

JOHN B. McDONALD, *Respondent.*

APPEAL by the plaintiff, Joseph A. Haefelin, from an interlocutory judgment of the Supreme Court in favor of the defendant, entered in the office of the clerk of the County of New York, on the 19th day of January, 1904, upon the decision of the court, rendered after a trial at the New York Special Term, sustaining the defendant's demurrer to the plaintiff's complaint.

MR. JOHN A. GARVER, for the appellant.

MR. DE LANCEY NICOLL, for the respondent.

INGRAHAM, J.—The complaint alleges that the plaintiff is the owner of a piece of property abutting on the easterly side of Broadway, between One Hundred and Sixty-fourth and One Hundred and Sixty-fifth streets, in The City of New York; that on or about February 21, 1900, The City of New York, acting by the Board of Rapid Transit Railway Commissioners, entered into a contract with the defendant for the construction and equipment of a rapid transit railroad upon the routes and pursuant to the general plan therein prescribed; that the said contract provided that the defendant should receive, in consideration for the said work, a large sum of money from the city; that the said routes and

plan provided for the construction of the said railroad under the portion of Broadway upon which the plaintiff's premises abut, at a depth of more than one hundred feet below the surface of the street; that the said contract contained provisions which were made for the benefit of persons whose property abutted on the streets in which said railroad was to be constructed, making the defendant liable to the owners of such abutting property, or of buildings or structures thereon, for damages thereto caused by improperly performing the work thereunder, which provisions were as follows:

"The contractor admits and covenants to and with The City that the plans and specifications and other provisions of this contract for construction, if the work be done without fault or negligence on the part of the contractor, do not involve any danger to the foundations, walls or other parts of adjacent buildings or structures; and the contractor shall, at his own expense, make good any damage that shall, in the course of construction, be done to any such foundations, walls or other parts of adjacent buildings or structures. The contractor shall, during the performance of the work, safely maintain the traffic on all streets, avenues, highways, parks or other public places in connection with the work, and take all necessary precautions to place proper guards for the prevention of accidents, and put up and keep at night suitable and sufficient lights and indemnify and save harmless the City against and from all damages or costs to which it may be put by reason of injury to the person or property of another or others, resulting from negligence or carelessness in the performance of the work or from guarding the same, or from any improper materials used in its construction, or by or on account of any act or omission of the contractor or the agents thereof. The contractor shall be responsible for all damage which may be done to abutting property or buildings or structures thereon by the method in which the construction hereunder shall be done, but not including in such damage any damage necessarily arising from proper construction pursuant to this contract, or the reasonable use, occupation or obstruction of the streets thereby. The contractor shall obey any order of the engineer to support or secure abutting property or

any structure thereon; but the contractor shall not be relieved of responsibility by any failure or omission of the engineer to give any such order or notice of any danger."

It was further alleged that 'the specifications which were annexed to and made a part of the said contract also contained provisions which were likewise intended for the benefit of owners of abutting property, regulating blasting in tunnel excavations which required blasting to be conducted with all possible care and in such a manner as not to shatter the roof and sides outside of the section lines nor endanger adjoining property; that blasts should not be fired between the hours of eight P. M. and seven A. M. where tunnels are in front of private residences without the express permission of the board and under such restrictions as it may impose. That prior to September, 1900, the defendant entered into a sub-contract with the firm of L. B. McCabe & Brother, whereby the said firm agreed to construct the sections of said railroad known as Nos. 13 and 14, and which include that portion of said railroad which passes through the part of Broadway upon which the premises of plaintiff abut; that during the month of September, 1900, the said firm, or persons acting under or by authority of their said sub-contract with the defendant, entered upon and took possession of the portion of Broadway lying within the route designated by the said contract between One hundred and Fifty-eighth and One Hundred and Sixty-eighth streets, and commenced to excavate the same for the purpose of constructing the said railroad; that the excavation was through solid rock, and was carried on by means of blasting which was done in violation of the specifications of the contract, the blasting being carried on at night between the hours of seven P. M. and seven A. M., without the permission of the said board; that "the method employed for such blasting was not proper or reasonable for the prosecution of the said work, but, on the contrary, such heavy and excessive charges and high explosives were used in such blasting, that the entire neighborhood was shaken thereby; and the provisions of the said contract were otherwise violated, and other improper methods were adopted for the construction of the said work."

It was further alleged that the plaintiff's apartment house was so shaken and shattered by the jar and concussion caused by such improper and unnecessary and excessive charges and high explosives used in the blasting, that the windows thereof were broken, the ceilings were cracked and in danger of falling, and the brick walls were loosened and shattered and otherwise seriously injured; and that the damage sustained by the plaintiff by reason of the improper manner in which the defendant performed the said contract was \$6,000; for which amount the plaintiff demands judgment.

The defendant demurred to this complaint upon the ground that it did not state facts sufficient to constitute a cause of action, which demurrer was sustained by the Special Term, and the plaintiff appeals.

The damage complained of and for which the plaintiff seeks to recover was caused by the negligence of sub-contractors or by the employment of improper and unreasonable methods for blasting by a sub-contractor in doing the work required by the sub-contract. It is not alleged that this defendant was personally responsible for the method employed by the sub-contractors or for the negligence or improper work done by them. In determining this question we have first to ascertain the true construction of this clause of the contract and just what obligation was imposed on the defendant, and then whether the plaintiff can enforce directly against the contractor the covenants entered into with the City.

The statute under which this contract was made is chapter 4 of the Laws of 1891, as amended by chapter 752 of the Laws of 1894, chapter 519 of the Laws of 1895, and chapter 729 of the Laws of 1896. That act provided that there should be submitted to the vote of the qualified electors of The City of New York the question whether an underground railroad should be built by and at the expense of the municipal corporation, and if a majority of the voters was in favor of such municipal construction that the railroad should be constructed by the City and at the public expense, and that the Board of Rapid Transit Railway Commissioners should construct said railroad and make and let all contracts required for the performance of the work necessary to be done and

performed in and about the construction thereof. (Laws of 1894, Chap. 752, §§ 12, 13.) Section 34 of the act of 1891, added by the act of 1894, and amended by the act of 1896, provided that in case the people should determine by vote that such railway should be constructed for and at the expense of the City, as soon as the necessary consents had been obtained* and the detailed plans and specifications had been prepared as provided in section 6 of the act,† the said board, "for and in behalf of said City, shall enter into a contract with any person, firm or corporation which, in the opinion of said board, shall be best qualified to fulfill and carry out said contract for the construction of such road or roads upon the routes and in accordance with the plans and specifications so adopted for such sum or sums of money to be raised and paid out of the treasury of said City, as hereinafter provided, and on such terms and conditions, not inconsistent with the aforesaid plans and specifications, as said board shall determine to be best for the public interests."

It was further provided that in case it should be determined by a vote of the people to construct this road by and at the expense of the City, then the road or roads so constructed should be and remain the absolute property of the city so constructing it or them, and should be deemed to be a part of the public streets and highways of said city, to be used and enjoyed by the public upon the payment of such fares and tolls, and subject to such reasonable rules and regulations as might be imposed and provided for by the board of rapid transit railway commissioners in said city. (Laws of 1891, chap. 4, § 63, added by Laws of 1894, chap. 752, and amd. by Laws of 1895, chap. 519.) The general plans for the building of this road were to be made by the Board of Rapid Transit Railway Commissioners, and were to be transmitted to the common council of the city and approved by it (Laws of 1891, chap. 4, §§ 4, 5, as amd. by Laws of 1895, chap. 519), so that when the consents of the local authorities and the property owners, or, in lieu thereof, the authorization of the General Term of the Supreme Court (now the Appellate Division thereof), should have

*See Laws of 1895, chap. 519, amdg. § 5 of statute of 1891.—[REP.]

†See Laws of 1896, chap. 729, amdg. § 6 of statute of 1891.—[REP.]

been obtained, the board of rapid transit railway commissioners should at once proceed to prepare detailed plans and specifications for the construction of such rapid transit railroad or railroads, including all devices and appurtenances deemed by it necessary to secure the greatest efficiency, public convenience and safety. (Laws of 1891, chap. 4, § 6, as amd. by Laws of 1896, chap. 729.)

The plans thus provided having been made by the rapid transit railway commissioners, and the general plans approved by the common council, the commissioners, acting thus under the authority conferred upon them by the Legislature, made, on behalf of the city of New York, a contract to build a railroad which, when constructed, was to be a public highway in the city of New York, to be used and enjoyed by the public upon payment of such fares and subject to such rules and regulations as might be imposed by the board of rapid transit railway commissioners. The only control that the city or its officers or agents had in relation to this contract was the right to approve or disapprove of the general plans for the construction of the road when adopted by the rapid transit railway commissioners. Neither the city nor its agents had authority to prescribe the form of the contract, or the conditions under which the railroad was to be constructed, or to control the action of the rapid transit railway commissioners, or the contractors with whom the commissioners had made a contract. The municipal corporation was not a contracting party, except so far as it was bound by the express provisions of the contract made on its behalf by the rapid transit railway commissioners acting under the legislative mandate. Under these conditions it is well settled that the city would not be liable for any negligence of a contractor or subcontractor in carrying out the contract. The rapid transit railway commissioners, on behalf of the city of New York, however, were required to prepare plans and specifications, and the general plans for the construction of the road were to be approved by the common council, and the only responsibility that rested upon the city was in regard to the general plans for the construction of this road.

This being the relation that the city bore to the work, the contractor undertook to construct the road according to these plans

and specifications, and in the contract covenanted to and with the city that the plans, specifications and the contract for construction, if the work be done without fault or negligence on the part of the contractor, would not involve any danger to the foundations, walls or other parts of adjacent buildings or structures; and in connection with this covenant he agreed to make good, at his own expense, any damage which should in the course of construction be done to any foundations, walls or other parts of adjacent buildings or structures. The contract was between the city and the contractor. He was to construct this road according to the plans and specifications and under the contract. He accepted the plans and specifications and the contract, and covenanted that if the work was properly done under it, it would avoid injury to abutting property; covenants important for the city to indemnify it for any claim for damages caused by the failure of the plans and specifications and the contract to require such a method of construction as would avoid injury to adjacent property. And to enforce this covenant, which was in substance an agreement to indemnify the city for its failure to see to it that the plans and specifications and contract were sufficient for the purpose, and would enable the construction of this public highway without injury to adjacent property, the contractor undertook that he would, at his own expense, make good any damage that should in the course of construction be done to abutting property. There is no indication in any part of the contract that it was the intention of the parties to impose upon the contractor a liability to the owners of the abutting property for negligence of sub-contractors or others over whom he had no control; and if such had been the intention, a clause expressly imposing such a liability would have been inserted.

Viewed in the light of the object sought to be attained, it seems to me that the only construction which can be given to this provision of the contract is that thereby it was intended to protect the city so as to impose upon the contractor responsibility for any defect or insufficiency in the plans and specifications, and an obligation to assume all damages caused in the course of the construction of the railroad, in following out the plans and specifications and the contract, to the foundations, walls or other parts of adja-

cent buildings or structures. The other provisions of this clause in the contract seem to me to sustain this construction. It is to and with the city that the defendant covenants. He undertakes that during the performance of the work he will safely maintain traffic on all streets, avenues, parks or other public places, and take all necessary precautions to place proper guards for the prevention of accidents, and put up and keep at night suitable and sufficient lights, and indemnify and save harmless the city against and from all damages or costs to which it may be put by reason of injury to persons or property of another or others, resulting from negligence or carelessness in the performance of the work or from guarding the same, or from any improper materials used in its construction, or by or on account of any act or omission of the contractor or his agents. Here the contractor assumes the duty that is imposed upon the city of keeping these streets and avenues in a safe condition for traffic, and the duty of suitably lighting excavations in the streets to avoid injury; and agrees to indemnify and save harmless the city from the damages which may be imposed upon it by reason of negligence or carelessness of the contractor or his agents in the performance of the work or in guarding the same. The defendant assumes the duties and obligations imposed on the city in relation to the construction of the road, and is responsible for the damages caused thereby; but it is to the city that the promise is made, and it is to the city that he is responsible, and there is no obligation or promise in this agreement to be responsible to any one else. The plaintiff was not a party to this contract. He was a stranger to the consideration upon which the promise of the defendant was based. There was no privity between him and the defendant, nor was the city under any obligation to indemnify him against injury that should be occasioned to his property by the negligence of a contractor in the performance of a contract made in pursuance of legislative authority by officers appointed for that purpose by the Legislature, and over the performance of which the municipal corporation had no control.

It is a general rule of the English common law that a stranger to the consideration could maintain no action upon a contract.

This was subject to an exception, that where the person to be benefited was the child of the promisee, the child could maintain an action against the promisor upon the contract (*Dutton v. Poole*, 2 Lev. 210; affd. in Exchequer Chamber, T. Raym. 302), and this exception has also been extended in this State to the case of a contract made by a husband for the benefit of his wife. (*Buchanan v. Tilden*, 158 N. Y. 109.) It is also established as an exception to this general rule that where a party to a contract undertakes to pay to a third party a sum of money based upon a consideration moving from the other party to the contract, and where the party paying the consideration was under an obligation to pay such sum of money to the third party, the third party can enforce that obligation, although not a party to the contract. This exception was established in this State by *Lawrence v. Fox* (20 N. Y. 268.) To bring a case, however, within this exception to the general rule, there must be a legal or equitable obligation or duty on the part of the promisee to the third party for whose benefit the promise was made. That it would be a benefit to the promisee to have such a covenant enforced, or that there was a moral obligation of the promisee to the third party for whose benefit the promise was made, is not sufficient to allow the third party to maintain an action to enforce the promise. In *Durnherr v. Rau* (135 N. Y. 222) Judge ANDREWS says, in speaking of the obligation of the promisee to the third party who sought to enforce the covenants: "The most that can be claimed is that the mortgages having (as is assumed) been executed to secure his (the promisee's) debts, and he having procured the wife to join in them and pledge her right for their payment, he owed her a moral duty to pay the mortgages and thereby restore her to her original situation. But according to our decisions no legal or equitable obligation of which the law can take cognizance was created in favor of the wife against the husband or his property by these circumstances. * * * There is lacking in this case the essential relation of debtor and creditor between the grantor and a third person seeking to enforce such a covenant, or such a relation as makes the performance of the covenant at the instance of such third person a satisfaction of some legal or equitable duty owing by the

grantor to such person, which must exist, according to the cases, in order to entitle a stranger to the covenant to enforce it. It is not sufficient that the performance of the covenant may benefit a third person. It must have been entered into for his benefit, or at least such benefit must be the direct result of performance and so within the contemplation of the parties, and in addition the grantor must have a legal interest that the covenant be performed in favor of the party claiming performance. * * * The application of the doctrine of *Lawrence v. Fox* (20 N. Y. 268) to this case would extend it much further than hitherto, and this cannot be permitted in view of the repeated declarations of the court that it should be confined to its original limits."

In *Vrooman v. Turner* (69 N. Y. 280) Judge ALLEN said: "To give a third party who may derive a benefit from the performance of the promise, an action, there must be, *first*, an intent by the promisee to secure some benefit to the third party, and *second*, some privity between the two, the promisee and the party to be benefited, and some obligation or duty owing from the former to the latter which would give him a legal or equitable claim to the benefit of the promise or an equivalent from him personally. It is true there need be no privity between the promisor and the party claiming the benefit of the undertaking, neither is it necessary that the latter should be privy to the consideration of the promise, but it does not follow that a mere volunteer can avail himself of it. A legal obligation or duty of the promisee to him will so connect him with the transaction as to be a substitute for any privity with the promisor, or the consideration of the promise, the obligation of the promisee furnishing an evidence of the intent of the latter to benefit him, and creating a privity by substitution with the promisor. A mere stranger cannot intervene and claim by action the benefit of a contract between other parties. There must be either a new consideration or some prior right or claim against one of the contracting parties, by which he has a legal interest in the performance of the agreement."

In *Wheat v. Rice* (97 N. Y. 296), one Stotenburgh sold to the plaintiffs an undivided fourth of certain property, and in consideration thereof the plaintiffs agreed to pay a sum of money and "to

assume and pay one-quarter of the present incumbrance on the property" and one-quarter of all the indebtedness of the firm of Stotenburgh, Root & Co., of which the said Isaac Stotenburgh was a member, as the same became due and payable. It was held that no creditor of Stotenburgh could maintain an action to recover the amount of the indebtedness, as there was no promise made to pay any single one of such creditors, or for the benefit of any one of them.

It is evident, therefore, that this covenant with the city by which the defendant covenanted at his own expense to make good any damage that should in the course of the construction of the rapid transit railroad be done to the foundations, walls or other parts of adjacent buildings or structures, is not an obligation that can be enforced by this plaintiff under the exception to the general rule established by *Lawrence v. Fox* (*supra*) and the other cases based upon that decision; for here there is no covenant to pay to the property owners any sum of money and the covenant is not one by which the defendant undertakes to discharge any legal or equitable obligation of the city to the owners of property abutting on the streets through which this railway was constructed.

There is another class of cases, however, upon which the plaintiff relies to maintain this action illustrated by *Little v. Banks* (85 N. Y. 258). In that case the defendant was a law book publisher who entered into a contract with the State by which he was to publish and sell the reports of the New York Court of Appeals. The contract provided that the defendant should at all times keep the volumes published for sale at retail at a price named, in one or more law book stores in the city of Albany and the city of New York, and it provided that "should any other law book seller in either of said cities apply to purchase any of said volumes, the same shall be supplied to such law book seller upon application," and that for a failure on the part of the defendant "to keep on sale, furnish and deliver the aforesaid volumes, or any of them, at the price and as hereinabove provided" the defendant "shall forfeit and pay * * * the sum of \$100 hereby fixed and agreed upon not as a penalty, but as the liquidated damages suffered by the person or persons aggrieved thereby, the same to be sued for and

recovered by the person or persons so aggrieved." It appeared that the plaintiffs applied on six different occasions for copies of some of the volumes published at the book store of the defendant, which the defendant refused to furnish, and the plaintiffs brought an action for six different sums of \$100 each by reason of such refusal. Judge MILLER, in delivering the opinion of the court, said: "The effect of the contract was that, in consideration of doing the work, the defendant would sell and deliver the books as provided to the persons who were entitled thereto, and if he failed to do so, as required, when demanded, he would pay to the person injured the damages." The ground of the liability of the defendant is said to be that "contractors with the State, who assume for a consideration received from the sovereign power by covenant, express or implied, to do certain things are liable, in case of neglect to perform such covenant to a private action at the suit of the party injured by such neglect, and such contract inures to the benefit of the individual who is interested in its performance," and it was held that this principle, without invoking the rule established in *Lawrence v. Fox* (*supra*), was applicable to a contract of the description of the one in controversy where the officers enter into it for the advantage and welfare of the public, and where such a provision constitutes a material portion of the agreement which is essential to carry it into effect.

It will be seen that, in this case, the liability of the defendant is placed, not upon the principle which authorizes a person not a party to an agreement to enforce a covenant in the agreement for his benefit, but upon the distinctly different proposition that where an individual by contract with the State assumes to perform a duty beneficial to the public, and fails to perform that duty, any one of the public injured by a failure to perform the obligation entered into with the State is entitled to maintain an action to recover the damages caused by a breach of the obligation assumed in the contract with the State—a position which is essentially different from a right to enforce such a covenant as is here in question. In this contract this defendant agreed that the plans, specifications and contract were sufficient, when properly carried out, to build this road without injury to abutting property; and

he covenanted that he would, at his own expense, make good any damage that should in the course of construction be done to such abutting property.

If this cause of action was based upon the fact that these plans, specifications and contract were such that doing the work without fault or negligence on the part of the contractor would cause injury to abutting property, and that the defendant or his sub-contractor had, while carrying out that contract according to the plans and specifications, occasioned injury to abutting property, a different case would be presented; but there is no such allegation in this complaint. On the contrary, it is alleged that the injury for which the plaintiff seeks to recover was caused by the negligent or improper performance of the contract by a sub-contractor, and not by a proper and careful construction according to the provisions of the contract and the plans and specifications. There was no duty to the public which was assumed by the defendant, the non-performance of which by the defendant has caused the plaintiff injury. It is the neglect or failure to perform a sub-contract by a sub-contractor of which the plaintiff complains; and there is nothing in the allegations of this complaint that brings this case within the principle established in *Little v. Banks* (*supra*). Here, so far as appears, the defendant has complied with his contract, and if the plaintiff's property has been injured through the negligence of sub-contractors it is those whose negligent acts have injured the plaintiff who are responsible to him.

There are several cases in the Appellate Division which follow *Little v. Banks*, relied on by the plaintiff. The first is *Cook v. Dean* (11 App. Div. 123), decided in the second department in December, 1896. In that case the plaintiff's intestate met his death by the falling of a temporary drawbridge over a creek separating Kings and Queens counties. The defendant had entered into a contract with the supervisors of Kings and Queens counties for the construction of a permanent bridge over the creek, and also for the construction of a temporary structure, which fell, the latter to be used by the general public until the new bridge should be completed; and it was there provided that the defendant "shall and hereby agrees to keep the above specified structure in good

repair during the progress of the work on the main structure and until directed to remove the same by the engineer." The defendant made a sub-contract for the erection of the temporary structure, and entered upon and assumed the duty of keeping it in repair after it was erected. And it was held that, under these circumstances, the defendant became liable for a neglect of duty in connection with the obligation assumed, and such neglect created a right of action in favor of the person who suffered injury therefrom in consequence thereof. This case has no bearing upon the right of the plaintiff to enforce a covenant in this agreement. There, it was a neglect to perform a duty which had been assumed by the defendant in his contract with the supervisors of the counties whose duty it was to provide a bridge for the public and to keep it in repair; and the contract between the defendant and the supervisors proved the fact that the defendant had assumed this duty to the public, a violation of which caused the injury for which the plaintiff was allowed to recover. The action was not brought to enforce a covenant made by the defendant to pay a sum of money to the plaintiff, contained in a contract between the defendant and the supervisors, but to recover for the negligent performance of a duty which the defendant had by its contract assumed to perform.

The case of *Glens Falls Gas Light Co. v. Van Vranken* (11 App. Div. 420) is also relied upon by the plaintiff. In that case the plaintiff maintained a system of gas pipes to supply gas in the village of Glens Falls, and the village authorities made a written contract with the defendants by which the defendants agreed to construct in the village a system of sewers, a portion of which was to be constructed in streets through which the plaintiff's gas pipes were placed. In the course of the construction of these sewers, the plaintiff's gas pipes were broken and injured in many places, and thereby caused the plaintiff damage. This contract contained a provision that the contractors were to make all provisions necessary to maintain and protect gas pipes, and to repair all damage done to sub-structures, and to be responsible for all damage that might be done to persons or property in the blasting of rock, and if injury was caused, the cost and repair were to be paid by the

contractors; and it was held that the defendants were liable. The question before the court was stated to be, "Can the defendants shield themselves under this contract and injure plaintiff's property, and still say that they are not liable under its provisions, which were evidently made for the benefit of the plaintiff and those in a like position? Can they do acts which without the contract would be wrongful, and with it are authorized only on condition that they compensate the parties injured? Is their justification complete and available as a defense until they perform as the instrument of justification requires?" The statement of this proposition decided by the court shows clearly that the decision is not an authority for holding the defendant in this action. There, it was the contractors who did the work that caused the injury, and for the injury that they caused they were held responsible. In this case, the damage was caused, not by the defendant, but by sub-contractors in the negligent performance of their work, and no act of the defendant is alleged that caused the injury.

In all of the cases that have been cited the defendant was held liable because it was his acts of negligence in the performance of a contract with the State or municipal authorities that caused the injury. In none of the cases does the liability rest solely upon a covenant by which the defendant agreed to be responsible for the negligence of others. An allegation that the defendant had violated his contract with the city, or had been negligent in its performance and that the injury to the plaintiff resulted therefrom—the essential fact upon which, in the cases to which attention has been called, the liability of the defendant was based—is absent in this case. (See *Conrad v. Trustees of Village of Ithaca*, 16 N. Y. 158; *Robinson v. Chamberlain*, 34 id. 389; *Willy v. Mulledy*, 78 id. 310.)

That the defendant is not responsible for the negligent acts of his sub-contractor is settled. (*Blake v. Ferris*, 5 N. Y. 48; *Booth v. Rome, W. & O. T. R. R. Co.*, 140 id. 267; *French v. Vix*, 143 id. 90.) In *French v. Vix* it was sought to hold the defendant responsible upon a clause in his contract with the owner of property by which he agreed "to become answerable and accountable for any damages that may be done to the property or person of

any neighbor or passerby during the performance of said work." The injury, to recover for which the action was brought, was caused by the negligence of sub-contractors in blasting, which was a part of the work that the defendant had agreed to do; and the opinion in that case, speaking of the case of *Booth v. Rome, W. & O. T. R. R. Co.* (*supra*), says: "We see no reason for reconsidering the points decided in that case, and it must be regarded as a precise authority for the respondents unless they can be held liable for these damages by virtue of the clause in their contract above quoted; and whatever view may be taken of that clause, it cannot impose liability upon them. If it be treated as a contract of indemnity, it could impose no liability because, Henry not being liable, there was nothing to call the indemnity into operation. The indemnitors could not be liable unless the party to be indemnified became liable. If it be claimed that this clause in the contract was intended for the benefit of the plaintiff, and that, therefore, she can enforce it, there are two answers to such a claim. It cannot be said that it was inserted for her benefit. The parties did not intend to provide indemnity against damages for which they were in no way liable. The sole purpose of the clause was the indemnity of Henry, and he alone, or some one in his right, could in a proper case enforce it. But even if it could be held that the contract contained in this clause was intended for the plaintiff's benefit, she was not a party to the contract nor in privity therewith, and as to her it was wholly without consideration. As Henry could not, under any circumstances, become liable for these damages, either on the ground of careless blasting or of inevitable damage, the case of *Vrooman v. Turner* (69 N. Y. 280) is an authority for holding that the plaintiff cannot sue upon and enforce the contract."

I can see no reason why this last statement as the law of this State is not controlling, and the judgment must be affirmed, with costs, with leave to plaintiff to amend complaint upon payment of costs in this court and in the court below.

O'BRIEN, McLAUGHLIN and HATCH, JJ., concurred; PATTERSON, J., dissented.

HATCH, J. (concurring):

In considering the proper construction of the contract relied upon in the complaint, it is well to understand, in the first instance, what the precise obligation of the city of New York was in connection with the construction of this work. The tunnel as completed is the property of the city, made so by the provisions of the statute and confirmed by the courts in construction of the same. (*Matter of McDonald*, 80 App. Div. 210; *affd.*, 175 N. Y. 470.) As the city did not construct the work through its agents and servants, but contracted for its performance, it could not be made liable for negligence in the manner in which the work was performed. The obligation, however, rested upon it to exercise care in providing for proper plans and specifications and a contract in fulfillment of the same which could be carried out without inflicting injury upon the walls of abutting structures. If plans were adopted in the carrying out of which a nuisance would be created, for the adoption of such plans the city would be liable, whether the work was performed by an independent contractor or by itself. (*Mayor, etc., of N. Y. v. Bailey*, 2 Den. 433.) This doctrine was recognized in *Maxmilian v. Mayor* (62 N. Y. 160), and also in *King v. N. Y. C. & H. R. R. Co.* (66 *id.* 181). If the city adopted plans and specifications which would necessarily inflict injury upon the abutting property owner, when it might, by the exercise of care, have provided plans under which the work could have been performed without injury to adjoining property, it could be held liable for negligence. This obligation upon the part of the city is primary, and when the authority is delegated it rests upon the doctrine of *respondeat superior*, which as was said by MULLETT, J., in *Blake v. Ferris* (5 N. Y. 48) "is founded on the power which the superior has a right to exercise, and which, for the prevention of injuries to third persons, he is bound to exercise over the acts of his subordinates." The city in this case had the power to adopt the plans by which the work should be done, and in the exercise of that power it also had authority to adopt such plans as would prevent injuries to third persons and thus prevent any injury in doing the work if the plans were properly carried out; consequently the doctrine precisely applies and has been rec-

ognized in many cases. (*Deeming v. Terminal Railway of Buffalo*, 169 N. Y. 1; *Ryder v. Thomas*, 13 Hun, 296; *McCafferty v. S. D. & P. M. R. R. Co.*, 61 N. Y. 178; *Lockwood v. Mayor*, 2 Hilt. 66.) The obligation, therefore, resting upon the city was that it should not adopt plans for the performance of the work which in the proper carrying out would produce a nuisance or necessarily inflict injury upon adjoining property. So, likewise, the city was charged with the obligation of maintaining its streets and public places, through which the work progressed, in a reasonably safe condition, and to properly guard all excavations and obstructions therein in order that accidents might be prevented. This duty, as it itself authorized the opening and obstruction of the streets and public places, it could not delegate, so as to relieve itself from liability, to an independent contractor. (*Storrs v. City of Utica*, 17 N. Y. 104.) The city, therefore, necessarily incurred, in connection with the performance of this work, a contingent liability from which it could not shelter itself behind the acts of an independent contractor; consequently, it was in a position where, for the purpose of safeguarding its interests and to protect itself from liability, it could demand that the contractor, by the terms of the contract, should provide in full measure indemnity for that part in which the city might be liable. To meet this situation the contractor, by this contract, covenants that the plans and specifications, if properly carried out, will not involve any danger to the foundations, walls or other parts of adjacent buildings or structures, and he further covenants that during the performance of the work he will maintain the streets and other public places in a reasonably safe condition, and indemnify and save the city harmless from any liability arising therefrom, and will make good any damage that shall arise in the course of construction. The further provision of the contract is: "The contractor shall be responsible for all damage which may be done to abutting property or buildings or structures thereon by the method in which the construction hereunder shall be done, but not including in such damage any damage necessarily arising from proper construction, pursuant to this contract, or the reasonable use, occupation or obstruction of the streets thereby."

It is claimed that this is a separate, independent provision of the contract, disassociated from any duty resting upon the city, and having for its sole purpose the indemnity of abutting property owners, and that the liability of the contractor is imposed by its terms to the full extent of providing indemnity to the property owner for any act of negligence either upon his part or upon the part of an independent contractor committed in any manner during the performance of the work. If such be its construction, it is manifest that the obligation imposed is onerous to the extent of being ruinous, for in considering the question the court cannot shut its eyes to the character of the work and its magnitude. It is common knowledge that great doubt existed as to whether a tunnel of this size could be constructed without entailing a destruction of the streets, undermining buildings and otherwise inflicting great damage in the process. Such being the fact, it is manifest that if, in addition to liability for such damage as is necessarily incurred, there is added liability for all acts of negligence no matter by whom committed, language imposing upon the contractor a burden of such magnitude ought to be so clear and explicit in its provisions as to leave no room for doubt as to the intent upon the part of the city to impose and the contractor to assume such burden. It is undisputable that for damage inflicted in the process of the work which did not arise out of defects in the plans the city would not be liable. (*Bates v. Holbrook*, 171 N. Y. 460, 468.) No obligation, therefore, rested upon the city to indemnify abutting property owners for any loss or damage occasioned by the proper performance of the work. It is equally well settled that in the prosecution of the work the contractor would not be liable for negligence in performance by an independent contractor when, if the work was properly performed, no damage would have resulted. (*McCafferty v. S. D. & P. M. R. R. Co.*, *supra*; *Miller v. N. Y., L. & W. R. R. Co.*, 125 N. Y. 118.)

It is claimed, however, that it was competent for the city to exact indemnity from the contractor for the property owner, and that the obligation having been assumed by the contractor, there is such privity of relation between the owner and the contractor

as will permit an enforcement of the covenant if there be a breach of its conditions; that under such circumstances the doctrine of *respondeat superior* does not apply, but liability is rested solely upon the terms of the contract and its breach. It is evident that a contract which thus radically changes the law in every essential relation existing between such parties ought to be expressed in clear and certain terms. There are no words in this contract which in express terms make this provision apply to third parties or to the owners of abutting property. The language laid hold of is that the contractor shall be responsible for all damage inflicted "by the method in which the construction hereunder shall be done." It is quite possible to satisfy this language by limiting the liability imposed thereby to such method used in construction as is required by the terms of the plans and specifications and the contract in furtherance thereof. If, however, the language be entitled to a broader construction than this, there are no words which extend the language to embrace anything beyond personal performance by the contractor. It falls short in language of imposing liability upon the contractor for acts of negligence by an independent contractor committed in the performance of his contract. The entire language of this clause may be given full force by construing it as providing for indemnity to an abutting property owner for acts of negligence committed in the method and manner of performing the work. While it is true that such construction would not add to the liability imposed upon the contractor for a negligent act of his own, yet in view of the very meagre statement from which is sought to be levied such an enormous responsibility it is quite persuasive in leading the mind to the conclusion that the purpose of the parties was simply to stipulate, and make certain, liability for negligent acts by the person committing the same in carrying out the contract. It ought not to receive a more enlarged construction in view of the principles of law which apply in such relation, in the absence of express words making the contractor liable for the acts of independent contractors over whom he could have no control in the method and manner of doing the work, beyond the terms of the contract, nor in the selection of instruments by which the work is done.

Aside from this question, however, it is plainly evident that the primary intention of both parties to the contract was to furnish indemnity to the city. If we give full force and a literal interpretation to this so-called independent provision we shall easily reach the conclusion that the contractor has been relieved from the primary obligation which the city sought to impose and that instead of standing as an indemnitor to the city he is relieved from liability therefor. After assuming responsibility for damages incurred by the method of construction the clause proceeds with this exception: "But not including in such damage any damage necessarily arising from proper construction pursuant to this contract or the reasonable use, occupation or obstruction of the streets thereby." We have already observed that the first clauses of the contract averred in the complaint imposed the absolute obligation and duty upon the contractor as a guarantor of the perfect character of the plans and the assumption of liability upon his part for the care of the streets and public places. If force is to be given to the quoted provision then it necessarily follows that if damage resulted to the abutting property owner from a proper performance of the plans and arise from a defect therein the language used relieves the contractor from liability therefor. It then becomes a pertinent subject of inquiry upon whom does the liability rest. Confessedly, if the plans were defective, liability for injury sustained arising out of proper performance becomes an obligation of the city; so that the necessary result is, if this construction obtain, that the contractor is relieved from liability and the city bears the burden. There can be no escape from this conclusion based upon such construction. Manifestly, the parties to this contract never contemplated such a result. It becomes, therefore, necessary to construe the provisions of this contract relating to these subjects together. So construed, it seems clear that the primary purpose was to indemnify the city against loss and damage for matters in respect to which it owed a duty; that the language of the last clause of the so-called independent provision must yield to the explicit provisions of the first clauses, and that the part of the contract set out in the complaint should be so construed as to carry out the primary purpose and intent of the par-

ties by imposing upon the contractor the obligation and duty which rested upon the city and give to the property owner the right to indemnity for acts of negligence occasioning injury against persons inflicting the same. Unless so construed, the necessary result is to relieve the contractor from liability to the city and make him only liable to the abutting property owner for negligence. In this respect the city owed no duty which it was called upon to protect, but it did owe a duty for which it sought indemnity, and no construction should be given to these clauses of the contract which works a destruction of such indemnity provision. So far as the contractor has assumed the duty resting upon the city he is liable to persons suffering injury on account thereof within the doctrine announced in *Cook v. Dean* (11 App. Div. 123; *affd.* on opinion below, 160 N. Y. 660) and many other cases. These cases all proceed upon the theory that where the obligor assumes the discharge of a public duty which devolved upon the corporation to perform, a party suffering injury may resort in the first instance to the person who has assumed the duty, and he stands in such privity of relation thereto as enables him to maintain the action. These cases are without application, however, for the reason that the plaintiff does not found his cause of action upon any duty resting upon the city. This is evident from the averments of his complaint, which clearly show that his cause of action arises out of the manner in which a sub-contractor carried on the blasting of rock in making the excavation for the tunnel. It rests, therefore, upon a negligent act of the sub-contractor. For that act, the city was not responsible and the plaintiff recognizes such fact by not making the city a party to his action. The duty and obligation assumed by the terms of the contract embraced only such matter as that for which the city would have been liable, and as no liability is shown to have arisen therefrom, so far as the cause of action now set out is concerned, no liability attached to the contractor by virtue of the terms of his contract, because he has not assumed such obligation and duty and it never rested upon the city.

I concur, therefore, with Mr. Justice INGRAHAM in the opinion which he has delivered in this case.

The judgment should be affirmed, with costs, with leave to the plaintiff to plead over within twenty days on the payment of costs in this court and in the court below.

O'BRIEN and McLAUGHLIN, JJ., concurred.

PATTERSON, J. (dissenting) :

Mr. Justice HATCH in his opinion in this case has fairly stated what, to my mind, is the determinant consideration therein, and that is, whether the provision of the contract that the contractor shall be responsible for all damages which may be done to abutting property or buildings or structures by the method in which the construction shall be done, not including damage necessarily arising from proper construction or reasonable use, occupation or obstruction of the streets, is a separate and independent provision dissociated from any duty resting upon the city and having for its sole purpose the security and indemnity of abutting property owners. If this is not an independent provision, then the views expressed by Mr. Justice HATCH are conclusive; but in my judgment it is independent and provides for conditions and situations entirely different from any others contained in the contract relating solely to the indemnity of the city. It seems to me that the provision in question is one which the contractor entered into for the benefit of third parties as one of the terms and conditions upon which the rapid transit commissioners awarded the contract to him. He was contracting for himself, and the question is not one of the relation of independent contractors to the work, nor of trespasses committed by them; for the defendant is the principal contractor and all the obligations of that contract devolved upon him. As I look at it, upon all the facts set forth in the complaint in this action, it is not a question of the liability of the city at all, but of the liability assumed by the defendant as a condition of his contract, not in indemnification of the city, but upon an original undertaking of his pursuant to a requirement of the rapid transit commissioners, who had the right to exact it from him for the protection of the owners of property abutting upon the line of the subway. Entertaining these views, I am unable to concur in the conclusion reached by my associates.

Judgment affirmed, with costs, with leave to plaintiff to plead over on payment of costs in this court and in the court below.

(*Reported 96 App. Div. 213*).

APPENDIX IV

CORRESPONDENCE
RELATING TO PROPOSED
NEW ROUTES

INTERBOROUGH RAPID TRANSIT COMPANY,

NO. 23 NASSAU STREET,

NEW YORK CITY, January 20, 1904.

AUGUST BELMONT, Esq., *President, Interborough Rapid Transit Company*, No. 23 Nassau Street, New York City:

DEAR SIR—I have received your letter of January 18, and am glad to learn that the Rapid Transit Commission desires an expression of the views of the Rapid Transit Subway Construction Company on the subject of extensions and new construction, as outlined by Mr. Parsons' plan. You will recall that, at a meeting of the Board of Directors of the Rapid Transit Subway Construction Company on September 23, when your letter to the Commission of the same date was read and approved, and you were authorized to communicate the same to the Rapid Transit Commission, I was not in favor at all of abandoning the Broadway extension; and I am still of the opinion that a vital necessity exists for the extension of the road, as then proposed, either to Fourteenth street or to Twenty-third street, and from that point down Fifth avenue, via South Fifth avenue, to Greenwich street, and thence on to the Battery, connecting there with our Brooklyn extension, or deflecting and going down some other route, although I can think of none equally as good.

Your letter did not withdraw the application, but stated to the Rapid Transit Commission that it would be perfectly satisfactory to the Rapid Transit Subway Construction Company if it abandoned the Broadway route. This, as far as I understand, the Commission has not done, nor has it changed its attitude of approval of the suggestion made in Mr. Parsons' report of an extension from Forty-second street down. I therefore urge strongly that the application be renewed.

In addition to this, as was contemplated by us if this was done, a subway connection can be built to the Pennsylvania station from Thirty-third street, for the operation of either shuttle trains or moving platforms, and I strongly urge that a request be made for this also.

The next extension in importance, and which the Rapid Transit Subway Construction Company should request from the Commission, is the construction of a three-track tunnel from Forty-second street up Lexington avenue, to and under the Harlem river, through Third avenue to One Hundred and Forty-ninth street, there connecting with our subway and elevated lines in The Bronx.

The Rapid Transit Commission, through its Chief Engineer, authorized the construction of the east side portion of the Park avenue tunnel, twenty-one feet east of the line originally proposed, with a view of making the extension which I hereby recommend. This would unify and complete the system in a manner indispensable to the proper operation of the road and relief of the traveling public, and would accomplish, in the building of these additions, the practical establishment of two lines of underground road knit together by a cross-town connection at Forty-second street.

As to the method of carrying on the work of the proposed extensions, our later experience in constructing the present lines has developed methods which convince us that the construction of a two-track or three-track tunnel can be carried forward without serious inconvenience to the public.

As our company is now at work upon a plan for adding one or two tracks to the Second avenue elevated line, thus establishing express service on the elevated on the east side, this, added to what I have recommended in the way of additions to the subway, would seem to my mind to furnish the lines for which there is the most pressing demand and which can be constructed within a reasonable time and with a minimum expenditure.

Yours very truly,

(Signed) JOHN B. McDONALD, Contractor.

NEW YORK, February 25, 1904.

ALEXANDER E. ORR, Esq., *President, Rapid Transit Commission:*

MY DEAR SIR—As the invitation to submit the suggestions which Mr. Vreeland is sending to Mr. Parsons to-day was based upon my representations to you as to the willingness of the Metropolitan interests to become, under certain conditions, bidders for the next rapid transit line, you may fairly expect a statement from me as to the co-operation which your Commission can count upon receiving from the Metropolitan interests.

The problem with which the surface lines have to deal and to which our present suggestions are directed is, of course, entirely distinct from the problem which your Commission has done so much to solve by securing the construction of the present subway line from The Bronx to the Battery and from there to Brooklyn. Now that you have provided effective means for carrying passengers at high rates of speed between Harlem and the Battery and between Brooklyn and Manhattan, the great traffic problem which confronts the City is how to provide more adequate means of communication for the portion of Manhattan Island which lies south of One Hundred and Twenty-fifth street, where over 80 per cent. of the combined population of the boroughs of Manhattan and The Bronx reside, and where the congestion of surface traffic has reached such proportions as to call for radical measures of relief.

Your Commission has wisely recognized in all of its plans that the great majority of the population of New York who daily travel to and fro between their homes and their places of business can afford but a single fare for each trip, and that the best rapid transit system is the one which provides for a single fare advantageous routes for the greatest number of people.

The inadequacy of the present service upon the surface lines is due largely to the fact that they are now compelled both to carry people long distances and to distribute them in the same surface cars. This would be remedied by a system under which people could be carried for long distances by underground routes, and distributed by the surface cars, without any increased charge to the

passenger. You most aptly described the line best calculated to meet this situation when in your statement to the Rapid Transit Commission on December 17, 1903, you suggested "a north and south line extending at least as far north as the Harlem river * * * and assuring an extensive system of transfers on the basis of a single fare."

A glance at the inclosed map will show how admirably the routes which we suggest are adapted to meet the requirements which you have laid down. Under the transfer system which we propose, by which the underground lines and our three hundred miles of surface lines on Manhattan Island would be operated as one system, almost every person on Manhattan Island would be able to ride from his place of residence to his place of business for a single fare of five cents and at a rate of speed which would be possible only with underground lines operated in connection with a complete system of surface lines. In other words, our plan would practically bring rapid transit to the door of every citizen.

While the routes which we suggest represent the most careful study of the engineering problems presented and of the needs of the six hundred million passengers who annually ride upon the Metropolitan lines, we recognize that the final responsibility for determining upon the next rapid transit route rests with your Commission and that all that we can do is to suggest and recommend. But agreeing, as I believe we do, upon the nature and scope of the present traffic problem, we are not likely to radically disagree as to the best means of solving it. I accordingly have no hesitation in giving you my assurance that if your Commission will lay out the rapid transit routes which we have proposed, or other routes which substantially meet the requirements of the situation, and no unduly onerous terms and conditions are imposed, the Metropolitan interests will submit an offer to undertake the construction of those lines and their operation in connection with their surface lines on Manhattan Island as a single system, thus assuring effective means of communication between all parts of Manhattan Island for a five-cent fare.

Of course, our primary motive in undertaking the construction of underground lines would be the expectation of additional busi-

ness and relief from the overcrowding which now makes it impossible for the surface lines to give satisfactory service. The public on the other hand, would have, without any increase in fares, a vastly improved and extended service.

Very truly yours,

(Signed) THOMAS F. RYAN.

NEW YORK, February 25, 1904.

WILLIAM BARCLAY PARSONS, Esq., *Chief Engineer, Rapid Transit Commission:*

DEAR SIR—Our engineers have completed the preliminary investigations necessary to enable me to comply with your request for the suggestions of the Metropolitan interests respecting the next underground rapid transit route to be laid out by the Rapid Transit Commission. I have assumed that it is the desire of the Rapid Transit Commission that our suggestions should be directed to such a route as President Orr described in his communication to the Rapid Transit Commission of December 17, 1903, viz.: "A north and south line extending at least as far north as the Harlem river, which will be so arranged as to be the subject of competition by at least the Interborough Company and the Metropolitan Company," and also "assuring an extensive system of transfers on the basis of a single fare." The route indicated upon the map submitted herewith has been laid out with a special view to meeting those requirements.

The northern terminus of the proposed route is at a point in The Bronx near Third avenue and One Hundred and Thirty-eighth street, at the principal business center of The Bronx where seven of our surface lines converge. From this point the route extends under the Harlem river to Lexington avenue, down Lexington avenue past the Grand Central Station to Fifteenth street, along Fifteenth street and under Union Square to Broadway (passing under the present subway at Union Square), down

Broadway to Chambers street, along Chambers street to William street (passing under the present subway and the proposed bridge loop), along William street to Hanover square and thence to the Battery through Coenties slip and South street, through the Battery (passing outside the Battery loop of the present subway and over the Brooklyn extension thereof) to Greenwich street, along Greenwich street, West Broadway and Hudson street to Eighth avenue, along Eighth avenue to Thirty-fourth street (passing above the Pennsylvania tunnel and through the center of the new Pennsylvania station at a grade which has been approved by the Pennsylvania Railroad Company), and along Thirty-fourth street (passing under the Interborough tunnel at Park avenue) to a junction with the main route at Lexington avenue. It is also proposed to add a loop connection on Chambers street between the east side line and the west side line. The plan contemplates the ultimate extension of the west side line from Thirty-fourth street along Eighth avenue to the Harlem river.

The proposed routes are exceptionally well adapted for operation under a transfer arrangement with our three hundred miles of surface lines on Manhattan Island, and more especially our twenty-three cross-town lines. By utilizing the surface lines for local traffic and for carrying long-distance passengers to and from the nearest subway stations, it would be possible to very greatly reduce the number of subway stations which would otherwise be necessary, thus materially increasing the speed and efficiency of the underground service.

The transfer system which we propose, by which the underground lines and the surface lines would be operated as one system, would establish means of expeditious communication between all parts of Manhattan Island for a five-cent fare. Such a comprehensive result is, of course, possible only with underground lines operated in connection with a complete network of surface lines.

In my opinion the proposed plan would not only accomplish a most radical extension of the facilities for local travel on Manhattan Island, but would relieve the congestion upon certain of our lines which are now crowded beyond endurance. Indeed,

some such plan offers the only effective means of relieving that congestion.

Our surface lines which converge at The Bronx terminus and the network of surface lines with which they connect would bring the proposed underground line within easy reach of a much larger proportion of the population of The Bronx than can be served by the rapid transit line about to be opened.

The rapid transit routes which we recommend, in addition to offering the special advantages due to their operation in connection with the surface lines to which I have called attention, offer the following additional advantages which seem to be of controlling importance:

1. The lines which we propose contemplate two exceptionally direct north and south rapid transit routes for Manhattan Island, following in the main, the lines of travel where the congestion is now the greatest, and provided with such loop connections as will most efficiently distribute the train service where it may be needed at the various hours of the day.
2. They would furnish means of reaching every part of the City to the 35,000,000 passengers who are expected to pass annually through the new Pennsylvania station, as well as direct communication between that station and the Grand Central Station.
3. They would afford direct underground connection with the proposed trolley tunnels under the Hudson river which are to have their termini at Christopher street and Cortlandt street, respectively, and connections could readily be made with all the East river bridges.
4. By utilizing the cross-town subway lines on Chambers street and Thirty-fourth street an underground belt line is provided for the lower end of the island which would furnish the much needed rapid transit connections between the east and west sides of the city, including means for the residents of the upper east side to reach the lower west side without congesting the cross-town surface lines.

5. In short, the plan provides a belt line for the southern part of the city which could receive by underground connections the traffic from the three Hudson river tunnels (at Cortlandt, Christopher and Thirty-fourth streets), from the Long Island Railroad Company's tunnel under the East river, and from two and perhaps three of the bridges from Brooklyn, and distribute this traffic to every part of the city largely by underground routes.

I am prepared to submit the large scale drawings prepared by our engineers, showing the curves and connections on the proposed routes, and other details.

Yours truly,

(Signed) H. H. VREELAND, President.

APPENDIX V

REPORTS IN REFERENCE

TO

ROLLING STOCK AND SAFETY APPLIANCES

ROOMS 1204 TO 1210,
WALLACE BUILDING, No. 56 PINE STREET,

NEW YORK CITY, February 8, 1904.

Board of Rapid Transit Railroad Commissioners, WILLIAM BARCLAY PARSONS, Esq., *Chief Engineer*, No. 320 Broadway,
New York City:

DEAR SIR—We have received your letter of November 28, 1903, referring to the cars proposed to be used by the Interborough Rapid Transit Company on the subway now under construction, with the sundry specifications and plans; also your letter of January 8, 1904, transmitting to us a letter from Mr. L. B. Stillwell, Electrical Director of the Interborough Rapid Transit Company, with sundry specifications, drawings, etc.; this last letter having been sent in answer to our request of November 30, 1903, for further information in this matter.

You ask us to give our opinion whether these cars conform to the requirements of the Rapid Transit contract, and whether these cars are suitable and satisfactory for use in the subway.

Referring to the first question, the lease with the Subway Company contains the following clause with reference to rolling stock.

"The contractor shall at all times provide, in quantities amply sufficient for the travel to the full capacity of the railroad, cars, rolling stock and other parts of the equipment of the best character known at the time to the art of intraurban railway operation."

The cars in question meet this requirement fully. It is evident that great care has been taken to guard as far as possible against all sources of danger; in particular, the entire bottom of the car

except the part over the motor truck, is covered with a heavy sheet of fireproof material known as "transite"; over the motor truck is a quarter-inch sheathing of steel, backed by asbestos; the outside of the car is sheathed with copper; the insulation of all wires is of the best quality of rubber and the wires are inclosed either in an asbestos material or in an iron tube; special precautions are taken to prevent abrasion of insulation. All fuses are inclosed and are placed so that the insulation of wires cannot be damaged by vapor arising from a fuse. The design shows that unusual care has been taken to insure the best construction and the greatest safety, with the result that these cars are an improvement upon any car built before.

Furthermore, in our opinion, these cars are suitable and satisfactory for use in the subway, although it is distinctly to be understood that no car containing inflammable material can be fireproof, and that only a car constructed completely of metal will entirely eliminate danger from fire.

We are informed that tests are being made on an all-steel car, and we hope that the availability of cars of that type for use in the subway will be clearly demonstrated by these tests and by subsequent test in service.

Very respectfully yours,

(Signed) LOUIS DUNCAN and CARY T. HUTCHINSON.

NEW YORK, February 19, 1904.

Hon. A. E. ORR, President, Rapid Transit Board:

MY DEAR SIR—In accordance with the terms of the contract the Interborough Rapid Transit Company, the lessees of the subway, have submitted the general plan of the cars with which they propose to operate it. These plans have been submitted to Messrs. Duncan & Hutchinson, the Consulting Electrical Engineers, and I annex copy of their report.

In addition to the examination that these gentlemen have made, I have made an examination myself of these cars, some of which have been delivered and are in operation on the Second avenue elevated. These cars undoubtedly represent the highest state of the art of car construction as now developed, and embody all the devices for safety that experience has shown to be necessary, and I would recommend that the same be approved.

Up to this date there has been no experience in building cars entirely of metal, and until such experience has been had I would not be willing to recommend that all-metal cars be employed. The company, however, has been making certain experiments in this line to obtain the necessary information. One such all-steel car has been constructed, and is now in daily operation for test purposes. I have examined this car; apparently it meets the requirements. If further experiments indicate that this car is satisfactory, it is probable that the company will order several such cars made for further trial. Possibly the company will, in the end, decide to use the all-steel cars for motor cars, employing the cars which have already been built as trailers.

Very truly yours,

(Signed) WM. BARCLAY PARSONS, Chief Engineer.

THE BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS.

CHIEF ENGINEER'S OFFICE, NO. 320 BROADWAY,

NEW YORK, August 11, 1904.

Hon. A. E. ORR, President, Rapid Transit Board:

MY DEAR SIR—The contractor for Contract No. 1 has submitted his methods of signals to be used on the Rapid Transit Railway, also an emergency signal system and provision for cutting off the power from the contact rail in cases of trouble and a method of protecting the "contact" rail along the whole line of the railway.

The system of signals as proposed is called the "Electric Pneumatic Block and Interlocking System," and by this method the signaling power can be readily conducted any distance and used with a very compact apparatus for limited spaces. The movements of the mechanism can be made to work with certainty and promptness, and so connected that the traveling public will be served with a safety device the most complete of its kind to date. This system has been worked out after many years of practical operation on large lines of railway, its reliability and efficiency are beyond question, and is best described in extracts from the report below by the designer, Mr. George Gibbs, who has been employed by the contractor as Consulting Engineer for this portion of the work. This system installs a complete automatic block signal system for the express lines; and also a block protection for all portions of the railway where there are curves and changes in the line, which in any way will tend to impede the passage of the trains:

"In the application of an automatic block system to an electric railway where the rails are used for the return circuit of the propulsion current, it is necessary to modify the system as usually applied to a steam railway, and introduce a track circuit control that will not be injuriously influenced by the propulsion current. This has been successfully accomplished for moderately heavy electric railway traffic in the Boston Elevated installation, which was the first electric railway to adopt a complete automatic block signal system with track circuit control.

"The New York Subway operation, however, contemplated traffic of unprecedented density, and consequent magnitude of the electric currents employed, and experience with existing track circuit control systems led to the conclusion that some modification in apparatus was essential to prevent occasional traffic delays.

"As elsewhere noted the proposed operation contemplates two tracks loaded with local trains at one-minute intervals, the latter class of trains requiring at times as much as 2,000 horse power for each train in motion. It is readily seen, then, that combinations of trains in motion may, at certain times, occur which will throw enormous demands for power upon a given section of the

road. The electricity conveying this power flows back through the track rails to the power station, and in so doing is subject to a 'drop' or loss in the rails which varies in amount according to the power demands. This 'drop' causes disturbances in the signal track circuit in proportion to the amount of drop, and it was believed that under the extreme condition above mentioned the ordinary form of track circuit might prove unreliable and cause delay in traffic. A solution of the difficulty was suggested, consisting in the employment of a current in the signal track circuit which would have such characteristic differences from that used to propel the trains as would operate selectively upon an apparatus which would in turn control the signal. Alternating current supplied this want on account of its inductive properties, and was adopted, after a demonstration of its practicability under similar conditions on another electric railway.

"After a decision was reached as to the system to be employed the arrangement of the block sections was considered from the standpoint of maximum safety and maximum traffic capacity, as it was realized that the rapidly increasing traffic of Greater New York would almost at once tax the capacity of the line to its utmost,

"The usual method of installing automatic block signals in the United States is to provide home and distant signals with the block sections extending from home signal to home signal, that is, the block sections end at the home signals and do not overlap each other. This is also to the arrangement of block sections where the telegraph block or controlled manual systems are in use. The English block systems all employ overlaps.

"Without the overlap a train in passing from one block section to the other will clear the home signals for the section in the rear, as soon as the rear of the train has passed the home signal of the block in which it is moving. It is thus possible for a train to stop within the block and within a few feet of this home signal. If then a following train should, for any reason, overrun this home signal it would result in a collision. With the overlap system, however, a train may stop at any point in a block section and still have the home signal at a safe stopping distance in the rear of the train.

Conservative signaling is all in favor of the overlap, on account of the safety factor in case the signal is accidentally overrun. Another consideration was the use of automatic train stops. These are placed at the home signals, and it is thus essential that a stopping distance should be provided in advance of the home signal to provide for stopping the train to which the brake has been applied by the automatic stop.

“Ordinarily the arrangement of overlap sections increases the length of the block sections by the length of the overlap, and as the length of the section fixed the minimum spacing of trains, it was imperative to make the blocks as short as consistent with safety in order not to cut down the carrying capacity of the railway. This led to a study of the special problem presented by subway signaling and a development of a blocking system upon lines which it is believed are distinctly in advance of anything heretofore done in this direction.

“Block section lengths are governed by speed and interval between trains, overlap lengths are determined by the distance in which a train can be stopped at the maximum speed. Usually the block section length is the distance between signals plus the overlap, but where maximum traffic capacity is desired the block section length can be reduced to the length of two overlaps, and this was the system adopted for the Interborough.

Description of Block Signaling System.

“The block signaling system as installed consists of the automatic overlapping system above described applied to the two express tracks between City Hall and Ninety-sixth street, a distance of six and one-half miles or thirteen miles of track; also to the third track between Ninety-sixth and One Hundred and Forty-fifth streets on the West Side Branch, a distance of two and one-half miles. This third track is placed between the two local tracks, and will be used for express traffic in both directions, trains moving toward the City Hall in the morning and in the opposite direction at night; also the two tracks from One Hundred and Forty-

fifth street to Dyckman street, a distance of two and one-half miles, or five miles of track. The total length of track protected by signals is twenty-four and one-half miles.

"The small amount of available space in the subway made it necessary to design a special form of the signal itself. Clearances would not permit of a 'position' signal indication; and further, a position signal purely was not suitable for the lighting conditions of the subway; a color signal was therefore adopted conforming to the adopted rule of the American Railway Association. It consists of an iron case fitted with two white lenses, the upper being the home signal and the lower the distant. Suitable colored glasses are mounted in slides which are operated by pneumatic cylinders placed in the base of the case. Home and dwarf signals show a red light for the danger or 'stop' indication. Distant signals a yellow light for the 'caution' indication. All signals show a green light for the 'proceed' or clear position. Signals in the subway are constantly lighted by two electric lights placed back of each white lens, so that the lighting will be at all times reliable.

"On the elevated structure semaphore signals of the usual type are used. The signal lighting is supplied by a special alternating current circuit independent of the power and general lighting circuits.

"A train stop or automatic stop is used at all block signals, and at many places for the switches. This is a device for automatically applying the air brakes if it should pass a signal in the stop position. This is an additional safeguard only to be brought into action when the danger indication has, for any reason, been disregarded and insures the maintenance of the minimum distance between trains as provided by the overlaps established.

"Great care has been given to the design, construction and installation of the signal apparatus so as to insure reliability of operation under the most adverse conditions, and to provide for accessibility to all the parts for convenience in maintenance.

"The system for furnishing power to operate and control the signals consists of the following:

"Two 500-volt alternating current feed mains run the entire length of the signal system. These mains are fed by seven direct current motor-driven generators operated in multiple located in the various sub-power stations; any four of these machines are sufficient to supply the necessary current for operating the system. Across these alternating mains are connected the primary coils of track transformers located at each signal, the secondaries of which supply current of about 10 volts to the rails of the track sections. Across the rails at the opposite end of the section is connected the track relay, the moving element of which operates a contact. This contact controls a local direct current circuit operating, by compressed air, the signal and automatic train stop.

"Direct current is furnished by two mains extending the length of the system, which are fed by eight sets of 16-volt storage batteries in duplicate. These batteries are located in the subway at the various interlocking towers, and are charged by motor generators, one of which is placed at each set of batteries. These motor generators are driven by direct current from the third rail and deliver direct current of 25 volts.

"The compressed air is supplied by six air compressors. * *

* Three of these are reserve compressors. They are motor driven by direct current motors, taking current from the direct current bus bars at sub-stations at from 400 to 700 volts. The capacity of each compressor is 230 cubic feet per minute.

"The motor driven air compressors are controlled by a unique device which responds to a variation of air pressure of five pounds or less. When the pressure has reached a predetermined point the machine is stopped and the supply of cooling water shut off. When the pressure has fallen a given amount, the machine is started light and when at full speed the load is thrown on and the cooling water circulation re-established. Oiling of cylinders and bearings is automatic, being supplied only while the machines are running.

Safety Devices.

"Two novel safety devices having to do especially with the signaling may be here described.

"The first is an emergency train stop. It is designed to place in the hands of the station attendants or others the emergency control of signals. The protection afforded is similar in principle to the emergency brake-handle found in all passenger cars, but operates to warn all trains of an extraneous danger condition. It has been shown in electric railroading that an accident to apparatus, perhaps of slight moment, may cause an unreasoning panic from which passengers may trespass on adjoining tracks in face of approaching trains, and express trains approaching at high rates of speed may not receive visual warning in time to stop; or other conditions may develop, such as a passenger being forced off a station platform, making an emergency control of trains desirable. To provide as perfectly as practicable for such conditions, it has been arranged to loop the control of signals into an emergency box set in a conspicuous position in each station platform. The pushing of a button on this box similar to that of the fire alarm signal, will set all signals immediately adjacent to stations in the face of trains approaching, so that all traffic may be stopped until the danger condition is removed.

"The second safety appliance is the 'section break' protection. This consists of a special emergency signal placed in advance of each separate section of the third rail, i. e., at points where trains move from a section fed by one sub-station to that fed by another. Under such conditions the contact shoes of the train temporarily span the break in the third rail. In case of a serious overload or ground on one station, the train wiring would momentarily act as a feeder for the section, and thus possibly blow the train fuses and cause delay. In order, therefore, to prevent trains passing into a dangerously overloaded section an overload relay has been installed at each section break to set a 'stop' signal in the face of an approaching train, which holds the train until the abnormal condition is removed."

The plans for an emergency signal system and also provision for cutting off power from the contact rail when necessary is to be installed in the subway, and the system is described as follows in a communication to this Department, and has been devised by Mr. L. B. Stillwell, the Electrical Director:

"At each manhole on the west side of the subway will be located two emergency 'pull boxes,' one to be used exclusively in case of fire in the tunnel, and the other to be used, when necessary, for emergencies due to causes other than fire. The fire alarm pull box will be painted red and the general emergency box will have aluminum finish. Each of these boxes will have a glass front, which must be broken before the hook is pulled. In case of accident in the subway, our train crews will be instructed to pull the proper box. If the fire alarm box be pulled the circuit-breakers at adjacent sub-stations through which contact rails in the section affected receive their power will be instantly opened and annunciator gongs located in these sub-stations will report the number (and consequently the location) of the box pulled. The fact that the trouble is caused by fire will also be indicated. Similar gongs in the train dispatchers' offices and in the office of the General Superintendent will convey the same information to these points and automatic recording devices in the train dispatchers' offices and in the office of the General Superintendent will make a record of the number of the box pulled.

* * * * *

"In case of fire the ticket sellers at adjacent passenger stations, to whom the fact and location of the trouble will have been communicated as above described, will be instructed to pull the City fire alarm box and thus summon the Fire Department.

"In case the emergency box be pulled, the circuit breakers at adjacent sub-stations will be opened (as in the case when the fire alarm box is pulled) and the supply of power to all contact rails in the section affected will be cut off. The fact of trouble will also be reported to the ticket offices of adjacent passenger stations, to the train dispatchers' offices and to the office of the General Superintendent, the number of box pulled being signalled by the annunciator. Automatic recording devices in the train dispatchers' offices and in the office of the General Superintendent will record the number of the box pulled.

"You will note that we are proposing to install two emergency signal systems, one for fire and one for possible trouble of other means not necessitating the presence of the Fire Department.

This apparatus is provided by the Gamewell Fire Alarm Telegraph Company, and all of the apparatus will be of the best class furnished by that company. The organization of apparatus by means of which power is automatically cut off from the contact rails in the section of the subway affected is new, and has been developed by the writer and his assistants in connection with this work, I feel that the system as a whole constitutes a marked improvement as compared with previous practice."

The proposed protection to this contact rail which furnishes the power for the propulsion of trains was devised by L. B. Stillwell, Electrical Director, and consists of a yellow pine plank which is supported above and parallel to the contact rails by means of wooden posts located at intervals of 4 feet. The plank is $8\frac{1}{2}$ inches wide and $1\frac{3}{8}$ inches thick. The posts which are attached to the contact rail are held in place by bolts, and these posts serve to support the plank and also to insulate it to a sufficient degree to prevent any serious trouble.

The particular points to which I beg leave to invite the attention of the Board are:

Separate current to operate the signals.

The overlap in the block system so as to provide a clear block intervening between contiguous trains.

Duplicate lights in each signal.

Automatic devices at each signal to cut off the train current and apply the brakes should the motorman attempt to overrun.

Emergency control of signals at all stations.

Emergency boxes in the subway, so arranged that in case of accident the trainmen can cut off power from the line and give immediate alarm.

These systems are very complete and much in advance of what has been done previously in railroad operation, and I recommend that they be approved.

Very truly yours,

(Signed)

GEORGE S. RICE,

Deputy Chief Engineer.

Approved:

WM. BARCLAY PARSONS, Chief Engineer.

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~~APPENDIX~~ VI

CERTIFICATE OF THE BOARD

TO THE

NEW YORK CONNECTING

RAILROAD COMPANY

**The Board of Rapid Transit Railroad Commissioners
for the City of New York**

TO

The New York Connecting Railroad Company.

CERTIFICATE, JUNE 23rd, 1904.

The Board of Rapid Transit Railroad Commissioners for the City of New York does hereby certify as follows:

WHEREAS, The New York Connecting Railroad Company (which is hereinafter called *the Railroad Company*) is a railroad corporation duly incorporated under the laws of the State of New York and owns and actually operates railroads now constructed which are wholly within the limits of the City of New York, which City is hereinafter called *the City*, and which railroads are hereinafter called *the railroad now constructed*; and

WHEREAS, The Railroad Company desires that the said railroad now constructed shall be connected with the railroad of the Harlem River and Port Chester Railroad Company and thereby with the railroad of the New York, New Haven & Hartford Railroad Company and that the said railroad now constructed shall be also connected with the railroad of the Long Island Railroad Company (both railroads with which connection is so desired being railroads within the State of New York and extending respectively from points within the City to points without the same), and that the said railroad now constructed shall be also connected with the railroad of the Pennsylvania, New York and Long Island Railroad Company (being a railroad now under

construction and situate and to be situate entirely within the City), and the Railroad Company desires by such connections to form a continuous line or lines for the carriage of passengers and property between points, on the one hand, within the City and more particularly points within the Boroughs of Brooklyn and Queens therein, and still more particularly points on the Long Island Railroad therein and, on the other hand, points as follows: FIRST, points without the City, along the railroad of the New York, New Haven & Hartford Railroad Company between the City and various points thereby reached in the States of Connecticut, Rhode Island and Massachusetts and other States of New England; SECONDLY, points upon the Long Island Railroad without the City; THIRDLY, points upon the line of the railroad of the Pennsylvania, New York and Long Island Railroad Company now being constructed and thereby and through it, by the Pennsylvania Railroad and otherwise, with points without the City upon the said Pennsylvania Railroad and upon its connections in the States of New Jersey, Pennsylvania and other States to the West and South, the intention being to establish rapid, direct and convenient connections between the said Boroughs of Brooklyn and Queens and such States of New England, the West and South; and

WHEREAS, The Legislature of the State of New York has, by chapter seven hundred and fifty-two of the laws of 1900, granted to the Railroad Company the right to construct upon the line of its railroad a bridge for railroad purposes only, of a single span across the East river at or near Hell Gate, together with necessary viaduct approaches, and to maintain and operate the same, the said bridge to have an elevation of not less than one hundred and thirty-five feet above mean high water and to span the East river from abutments built upon the shores thereof and within the bulkhead lines so as not to impede navigation upon the said river; and

WHEREAS, The Railroad Company did, prior to the 11th day of June, 1903, duly file its route and profile as provided by the

Railroad Law, and, whereas, later and on the said 11th day of June, 1903, the Railroad Company did duly and with the assent of two-thirds of all the Directors of the said Company file in the offices of the Clerks of the Counties of Queens and New York its amended route and profile, and on the 21st day of June, 1904, with like assent did file said amended route and profile in the office of the Clerk of the County of Kings; and

WHEREAS, The said route lies wholly within private property acquired or to be acquired by the Railroad Company except where the same crosses over or under certain streets, avenues and highways, and also except where the same extends over and across Ward's Island and Randall's Island and the waters surrounding the said islands and the shores of the East river, Little Hell Gate and Bronx Kills; and

WHEREAS, The Railroad Company, pursuant to section thirty-two of chapter four of the laws of 1891 as amended by chapter five hundred and eighty-four of the laws of 1902 (which entire statute as amended by various acts and as now in force, is hereinafter called *the Rapid Transit Act*) has made application to the Board of Rapid Transit Railroad Commissioners for the City of New York (which Board is hereinafter called *the Board*) to fix and determine the route or routes by which the Railroad Company may connect with the several railroads above mentioned, and may establish, construct and extend the lines of the Railroad Company within the City, and also for authority to the Railroad Company to lay railroad tracks within the City, and to operate its railway to certain terminals within the City, and otherwise for the authority and rights hereinafter more particularly set forth, including the right to transport over its railroad passengers and freight or both; and whereas, the additions, tracks, extensions, railroad and connections hereby authorized (and including the portion of the routes hereinafter described upon which the Railroad Company has already constructed and now owns a railroad) are hereinafter called *the new railroad*; and

WHEREAS, The Board, by a concurrent vote of at least six of its members, has fixed and determined the locations and plans of construction of such new railroad of the Railroad Company upon such routes and of such tracks and facilities, the times within which they shall be respectively constructed, and the compensation to be paid therefor to the City by the Railroad Company; and

WHEREAS, The Board, by such concurrent vote, has prescribed such terms, conditions and requirements as to the Board appear to be just and proper for the grant hereby made to the Railroad Company, including the terms, conditions and requirements provided by the Rapid Transit Act, and has included among them a provision that the Railroad Company shall, from the time of the commencement of the operation of such new railroad of the Railroad Company under such determination, annually pay to the City certain sums or rentals for a period of twenty-five years, beginning with such operation, and also providing for a readjustment of the amount of such sums or rentals at the expiration of such period and at intervals thereafter of twenty-five years—

Now, therefore, the Board has authorized and does hereby authorize, but subject, however, to the terms, conditions and requirements hereinafter set forth, the Railroad Company:

1. To lay down, construct and operate a railway upon a route the centre line of which is as follows, to wit: Beginning at a point in the Borough of Brooklyn over the northeasterly side of Knickerbocker Avenue near the Roman Catholic Cemetery of the Most Holy Trinity, and not more than one hundred and forty-five (145) feet or less than one hundred and fifteen (115) feet southeasterly from the southeasterly side of Moffat street as the same is now laid out or proposed, and running thence into the Borough of Queens and to the west of the Evergreen Cemetery and crossing over Cooper avenue at or near its intersection with Wyckoff avenue as now existing or proposed thence running in a generally northeasterly direction, crossing over Cypress avenue

at a point not more than one hundred and thirty-nine (139) feet or less than one hundred and nine (109) feet northwesterly from the intersection of the centre line of Cypress avenue with the centre line of Washington avenue, thence continuing in a generally northeasterly direction to a point over the centre line of Myrtle avenue not more than nine hundred and fifty-eight (958) feet or less than nine hundred and twenty-eight (928) feet westerly from the intersection of the said centre line of Myrtle avenue with the centre line of Fresh Pond Road; thence crossing over Fresh Pond Road at a point in its centre line not more than seven hundred and nineteen (719) feet or less than six hundred and eighty-nine (689) feet northwesterly from the intersection of the centre line of that road with the centre line of Myrtle avenue, thence continuing still in a generally northeasterly direction and crossing over Edsall Avenue at a point in the centre line thereof at or near its intersection with Howard street as now laid out or proposed until it intersects a portion of the railroad now constructed of the Railroad Company at a point distant not more than two hundred and fifty-nine (259) feet or less than two hundred and twenty-nine (229) feet east of the centre line of the railway of the Brooklyn Rapid Transit Company, where it crosses the railroad now constructed of the Railroad Company; thence northeasterly and crossing under the centre line of Metropolitan avenue at a point not more than seven hundred and twenty-nine (729) feet or less than six hundred and ninety-nine (699) feet westerly from the intersection of the centre line of Metropolitan avenue with the centre line of Juniper avenue as now laid out or proposed; thence running northeasterly and crossing under the centre line of Juniper avenue at a point not more than eleven hundred and fifty-nine (1159) feet or less than eleven hundred and twenty-nine (1129) feet northerly from the intersection of the centre line of Juniper avenue with the centre line of Metropolitan avenue; thence running northeasterly on a curve with its concavity to the west to a point under the centre line of Johnson avenue not more than three hundred and thirty-seven (337) feet or less than three hundred and seven (307) feet easterly from the intersection of the centre line of

Johnson avenue with the centre line of Western avenue as now laid out or proposed; thence northerly to a point under the centre line of the North Hempstead Plank Road not more than sixteen hundred and three (1603) feet or less than fifteen hundred and seventy-three (1573) feet easterly of the intersection of the said line of the said Plank Road with the centre line of Grand street; thence northerly to a point under the centre line of Grand street not more than five hundred and thirty-eight (538) feet or less than five hundred and eight (508) feet easterly from the intersection of the said centre line of Grand street with the centre line of Back street (or avenue); thence northerly to a point over the centre line of Calamus Road not more than one thousand and thirty (1,030) feet or less than one thousand (1,000) feet southeasterly from the intersection of the said centre line of Calamus Road with the centre line of Jackson avenue; thence northerly to a point in (over or under) the centre line of the main line of the Long Island Railroad not more than five hundred and fifteen (515) feet or less than four hundred and eighty-five (485) feet southeasterly from the intersection of said centre line with the centre line of Maurice avenue; thence northerly to a point over the centre line of Maurice avenue not more than seven hundred and forty-three (743) feet or less than seven hundred and thirteen (713) feet easterly from the intersection of said centre line of Maurice avenue with the centre line of Jackson avenue; thence northerly to a point over the centre line of Thompson avenue not more than five hundred and seventy-three (573) feet or less than five hundred and forty-three (543) feet southeasterly from the intersection of the said centre line of Thompson avenue with the centre line of Lexington avenue; thence northwesterly to a point under the centre line of the Newtown Turnpike not more than one hundred and seventy-seven (177) feet or less than one hundred and forty-seven (147) feet westerly from the intersection of the said centre line of Newtown Turnpike with the centre line of Walnut street; thence northwesterly to a point under the centre line of Chestnut street not more than two hundred and forty-six (246) feet or less than two hundred and sixteen (216) feet westerly from the intersection of the said centre line of Chestnut

street with the centre line of Walnut street; thence northwesterly to a point under the centre line of Prospect street not more than three hundred and eighteen (318) feet or less than two hundred and eighty-eight (288) feet westerly from the intersection of the said centre line of Prospect street with the centre line of Walnut street; thence northwesterly to a point under the centre line of Woodside avenue not more than four hundred (400) feet or less than three hundred and seventy (370) feet westerly from the intersection of the said centre line of Woodside avenue with the centre line of Walnut street; thence northwesterly to a point under the centre line of First street not more than two hundred and three (203) feet or less than one hundred and seventy-three (173) feet easterly from the intersection of the said centre line of First street with the centre line of Worthington street; thence northwesterly to a point under the centre line of Forest street not more than nine hundred and seventy-three (973) feet or less than nine hundred and forty-three (943) feet easterly from the intersection of the said centre line of Forest street with the centre line of Trains Meadow Road; thence northwesterly to a point under the centre line of Trains Meadow Road not more than one hundred and ninety (190) feet or less than one hundred and sixty (160) feet westerly from the intersection of the said centre line of Trains Meadow Road with the centre line of Sprague street as now laid out or proposed; thence northwesterly to a point over the centre line of Jackson avenue not more than eighty-one (81) feet or less than fifty-one (51) feet easterly from the intersection of the said centre line of Jackson avenue with the centre line of Ninth street as now laid out or proposed; thence northwesterly to a point over the centre line of Charlotte avenue not more than one hundred and ninety-six (196) feet or less than one hundred and sixty-six (166) feet westerly from the intersection of the said centre line of Charlotte avenue with the centre line of Ninth street as now laid out or proposed; thence northwesterly to a point over the centre line of the Bowery Bay Road not more than five hundred and fifty-four (554) feet or less than five hundred and twenty-four (524) feet southwesterly from the intersection of the said centre line of the Bowery Bay Road with

the centre line of Wilson avenue; thence northwesterly to a point over the centre line of Wilson avenue not more than seven hundred and eighty-four (784) feet or less than seven hundred and fifty-four (754) feet northwesterly from the intersection of the said centre line of Wilson avenue with the centre line of the Bowery Bay Road; thence northwesterly to a point over the centre line of Titus street not more than one hundred and sixty-one (161) feet or less than one hundred and thirty-one (131) feet northeasterly from the intersection of the said centre line of Titus street with the centre line of Wilson avenue; thence northwesterly to a point over the centre line of Luyster street not more than three hundred and thirty-one (331) feet or less than three hundred and one (301) feet northeasterly from the intersection of the said centre line of Luyster street with the centre line of Wilson avenue; thence northwesterly to a point over the centre line of Stemler street not more than four hundred and ninety-six (496) feet or less than four hundred and sixty-six (466) feet northeasterly from the intersection of the said centre line of Stemler street with the centre line of Wilson avenue; thence northwesterly, the railroad here beginning to ascend from natural grade by way of approach to the bridge over the East river, and while rising upon such approach, crossing over Flushing avenue at a point in the centre line thereof at or near its intersection with the centre line of Grace street as now laid out or proposed; thence crossing Nassau street, at a point over the centre line thereof not more than four hundred and seventy-four (474) feet or less than four hundred and forty-four (444) feet southeasterly from the intersection of the said centre line of Nassau street with the centre line of Steinway avenue, crossing Frankfort street at a point over the centre line thereof not more than one hundred and thirty-four (134) feet or less than one hundred and four (104) feet southeasterly from the intersection of the said centre line of Frankfort street with the centre line of Steinway avenue, crossing Steinway avenue at a point over the centre line thereof not more than four hundred and thirty-two (432) feet or less than four hundred and two (402) feet southwesterly from the intersection of the said centre line of Steinway avenue

with the centre line of Potter avenue, crossing Kouwenhoven street at a point over the centre line thereof not more than three hundred and twenty-one (321) feet or less than two hundred and ninety-one (291) feet southwesterly from the intersection of said centre line of Kouwenhoven street with the centre line of Potter avenue as now laid out or proposed, crossing Pomeroy street at a point over the centre line thereof not more than two hundred and sixteen (216) feet or less than one hundred and eighty-six (186) feet southwesterly from the intersection of said centre line of Pomeroy street with the centre line of Potter avenue as now laid out or proposed; thence in a northwesterly direction on a curve with its convexity towards the east, crossing Blackwell street at a point over the centre line thereof not more than one hundred and eleven (111) feet or less than eighty-one (81) feet southwesterly from the intersection of the said centre line of Blackwell street with the centre line of Potter avenue, crossing Potter avenue at a point over the centre line thereof about midway between Blackwell street and Rapelje street, crossing Rapelje street at a point over the centre line thereof not more than one hundred and one (101) feet or less than seventy-one (71) feet northeasterly from the intersection of the said centre line of Rapelje street with the centre line of Potter avenue, crossing Debevoise avenue at a point over the centre line thereof not more than two hundred and nine (209) feet or less than one hundred and seventy-nine (179) feet northeasterly from the intersection of the said centre line of Debevoise avenue with the centre line of Potter avenue, as now laid out or proposed, crossing Lawrence street at a point over the centre line thereof not more than two hundred and eighty-seven (287) feet or less than two hundred and fifty-seven (257) feet northeasterly from the intersection of the said centre line of Lawrence street with the centre line of Potter avenue, crossing Chauncey street at a point over the centre line thereof not more than three hundred and thirty (330) feet or less than three hundred (300) feet northeasterly from the intersection of the said centre line of Chauncey street with the centre line of Potter avenue, crossing Crescent street at a point over the centre line thereof not more than four

hundred and five (405) feet or less than three hundred and seventy-five (375) feet northeasterly from the intersection of the said centre line of Crescent street with the centre line of Potter avenue as now laid out or proposed, to a point over the centre line of the Boulevard not more than four hundred and sixty-five (465) feet or less than four hundred and thirty-five (435) feet northeasterly from the intersection of the said centre line of the Boulevard with the centre line of Potter avenue as now laid out or proposed; thence by bridge in a northwesterly direction over the East river to a point on Ward's Island; thence with a curve towards the east in a general northeasterly direction by bridge over Ward's Island and Little Hell Gate to a point on Randall's Island; thence still continuing in a general northeasterly direction by bridge over Randall's Island and the Bronx Kills to a point in Willow avenue in the Borough of The Bronx not more than seven hundred and ninety-two (792) feet or less than seven hundred and forty-two (742) feet southwesterly from the intersection of the said centre line of Willow avenue with the centre line of East 132nd street; thence northeasterly, the route here descending on the approach from the Bronx side of the bridge over the East river, and while upon such approach crossing Willow avenue; crossing East 132nd street at a point over the centre line thereof not more than three hundred and two (302) feet or less than two hundred and seventy-two (272) feet southeasterly from the intersection of the said centre line of East 132nd street with the centre line of Willow avenue; crossing East 133d street at a point over the centre line thereof not more than three hundred and seventy (370) feet or less than three hundred and forty (340) feet southeasterly from the intersection of the said centre line of East 133d street with the centre line of Willow avenue, crossing East 134th street at a point over the centre line thereof not more than four hundred and sixteen (416) feet or less than three hundred and eighty-six (386) feet southeasterly from the intersection of the said centre line of East 134th street with the centre line of Willow avenue, crossing East 135th street at a point over the centre line thereof not more than four hundred and fifty-five (455) feet or less than four hundred and twen-

ty-five (425) feet southeasterly from the intersection of the said centre line of East 135th street with the centre line of Willow avenue, crossing East 136th street at a point over the centre line thereof not more than four hundred and ninety-four (494) feet or less than four hundred and sixty-four (464) feet southeasterly from the intersection of the said centre line of East 136th street with the centre line of Willow avenue crossing East 137th street at a point over the centre line thereof not more than five hundred and thirty-three (533) feet or less than five hundred and three (503) feet southeasterly from the intersection of the said centre line of East 137th street with the centre line of Willow avenue, crossing East 138th street at a point over the centre line thereof not more than five hundred and seventy-four (574) feet or less than five hundred and forty-four (544) feet southeasterly from the intersection of the said centre line of East 138th street with the centre line of Willow avenue, the route here reaching the commencement of the approach from The Bronx side of the bridge over the East river, and here connecting with the railroad of the Harlem River and Port Chester Railroad Company.

Together with spurs or connections as follows, to wit:

A. A spur or connection upon a route, the centre line of which is as follows, to wit: Beginning at a point in the railway hereinbefore in paragraph 1 described about midway between the crossings of Fresh Pond Road and Edsall avenue; and running thence northeasterly along a curve with its convexity towards the north to a point in the railroad now constructed of the Railroad Company south of the Lutheran Cemetery and not more than fourteen hundred and fifteen (1415) feet or less than thirteen hundred and fifteen (1315) feet westerly from the Glendale station of the said railroad as now constructed.

B. A spur or connection upon a route, the centre line of which is as follows, to wit: Beginning at a point in the centre line of the railroad now constructed of the Railroad Company not more

than fourteen hundred and fifteen (1415) feet or less than thirteen hundred and fifteen (1315) feet westerly from the Glendale station of the said railroad as now constructed; running thence northwesterly along a curve with its convexity towards the southwest and crossing the railroad now constructed of the Railroad Company at a point not more than three hundred and ninety (390) feet or less than three hundred and sixty (360) feet southeasterly from the intersection of the said railroad now constructed with the centre line of the railway of the Brooklyn Rapid Transit Company; thence running northerly and west of the Lutheran Cemetery to a point in the railway hereinbefore in paragraph I described not more than five hundred and forty (540) feet or less than four hundred and forty (440) feet along said railway northeasterly from the intersection of its centre line with the railroad now constructed of the Railroad Company.

C. A spur or connection upon a route, the centre line of which is as follows, to wit: Beginning at a point in the centre line of the railroad now constructed of the Railroad Company distant not more than one thousand and eighty (1080) feet or less than nine hundred and eighty (980) feet northwesterly from the intersection of the centre line of the said railroad now constructed with the centre line of the railway of the Brooklyn Rapid Transit Company west of the Lutheran Cemetery; running thence upon a curve with its convexity towards the southeast to a point in the railway hereinbefore in paragraph I described not more than three hundred and sixty-five (365) feet or less than two hundred and sixty-five (265) feet southwesterly along said railway from the intersection of the centre line of the said railway with the centre line of Metropolitan avenue.

D. A spur or connection upon a route, the centre line of which is as follows, to wit: Beginning at a point in the railway hereinbefore in paragraph I described, about fifty (50) feet southeasterly from the intersection of its centre line with the centre line of Bowery Bay Road, thence in a general southwesterly direction to a point over the centre line of Charlotte avenue not more than one hundred and thirty-five (135) feet or less than one hundred

and five (105) feet easterly from the intersection of the said centre line of Charlotte avenue with the centre line of Fourth street; thence crossing Fourth street at a point over the centre line thereof not more than four hundred and sixty-one (461) feet or less than four hundred and thirty-one (431) feet northerly from the intersection of the said centre line of Fourth street with the centre line of Jackson avenue; thence crossing over Third street and Jackson avenue at a point at or near the northwest corner of their intersection; thence still in a general southwesterly direction crossing Woodside avenue at a point over the centre line thereof to a point in the centre line of the railroad of the Pennsylvania, New York and Long Island Railroad Company, now being constructed on the westerly side of Woodside avenue.

The said route is illustratively shown upon the plan and profile of the new railroad and its spurs and connections herewith attached—which plan and profile are to be deemed a part of this franchise and to be construed with the text hereof, and are to be substantially followed; PROVIDED that deviations therefrom which are consistent with the foregoing description and the other provisions of this franchise may be permitted by the Board.

2. To lay down, construct and operate upon the main line of the said route of the said railway tracks not exceeding four in number, and upon the said spurs A., B., C. and D. tracks not exceeding two in number, PROVIDED that the entire structure of the said railway, including cuttings and embankments, shall not over or under any street or road exceed two hundred (200) feet in width, and PROVIDED, still further, that the Railroad Company shall have the right to add an additional track by way of siding along any portion or portions of its main line of its said railway not in all exceeding in length of such siding or sidings forty (40) per cent. of the total length of the said main line, and to increase the width of the structure or right of way of the said railway by not more than fifty (50) feet for each such siding or sidings for the length or lengths thereof; PROVIDED, however, that the said percentage of sidings may be increased upon consent of the Board; and PROVIDED, further, that this provision shall not limit.

the right of the Railroad Company in the use of lands owned or which shall be owned by it.

3. To acquire and maintain terminals or stations.

4. To run upon the said railway (which with the said terminal, stations and all other appurtenances, are together hereinafter called the *new railroad*) locomotives, motors, cars and carriages for the transportation of persons and property and to use thereon and in connection therewith all suitable appliances.

5. To maintain and operate upon or over the routes aforesaid including all streets, avenues or highways which shall be intersected by the new railroad, or over or under which any part of the routes thereof shall run, telegraph wires and wires, cables, conduits, ducts and ways for the distribution of power, heat and light, and other appurtenances for use of the new railroad and for no other purpose.

6. To acquire and use for power plants, pumping stations, shafts or stairways for access to or from the railroad, and other necessary purposes of the new railroad, as well as for stations and station extensions, private property, as the same has been or shall be lawfully acquired, within the scope of the corporate rights and powers of the Railroad Company.

Nothing herein contained shall be deemed to give any right to construct or operate a railroad upon the surface of any street, avenue or highway in the City of New York.

The rights hereinbefore granted to maintain and operate the new railroad or necessary or convenient for that purpose, shall be held by the Railroad Company in perpetuity except as may be herein otherwise expressly provided.

But this authorization including all the rights and privileges hereby granted, are subject to certain terms, conditions and requirements which appear to the Board to be just and proper and as so subject, are hereinafter called the *franchise hereby granted*.

The following further terms, conditions and requirements are accordingly hereby prescribed as follows, to wit:

I.

This certificate will be executed by the Board in four identical originals, so proved as to be entitled to be recorded in the office of the Register or County Clerk of each of the Counties of Kings, Queens and New York, and to be filed in the office of the Secretary of State of the State of New York, all of which will be delivered by the Board to the President, Vice-President, Secretary or Treasurer of the Railroad Company. The franchise hereby granted shall be inoperative, and this certificate shall be void unless within thirty days after such delivery or such further period not exceeding three months as shall be prescribed in writing by the Board, the Railroad Company shall have procured three of the said identical originals to be returned to the Board, each of them having an acceptance of the franchise and all the terms, conditions and requirements thereof subscribed at the foot thereof by the Railroad Company, such acceptance being so proved as to entitle it to be recorded and filed as aforesaid.

II.

The franchise hereby granted shall, if the Board shall so determine, become void unless within six calendar months after the time of the delivery to the Board of the acceptance of this certificate by the Railroad Company, that Company shall, in due and lawful form, obtain or receive the consent of the Board of Aldermen of the City, being the local authority having the control of the streets, avenues and highways over or under which it is proposed to construct the new railroad, and of the other property of the City upon, under or over which such new railroad is to be constructed, together with the approval of the Mayor of the City.

The franchise hereby granted shall, if the Board shall so determine, become void, unless within one year after the time of such acceptance of this certificate by the Railroad Company, that Company shall further, and in due and lawful form, obtain, so far

as may be necessary, the consent of the owners of one-half in value of the property bounded on each portion of the streets or avenues over or under which the new railroad or any part of the route thereof runs, to the construction and operation of the new railroad or such part thereof, or in case the consent of such property owners cannot be obtained, then the determination of Commissioners to be appointed pursuant to law by the Appellate Division of the Supreme Court in the First Department or the Second Department (as the case may be) that such portion of the new railroad ought to be constructed and operated, the said determination of such Commissioners, when confirmed by the Appellate Division which shall have appointed such commissioners, to be taken in lieu of such consent of property owners, PROVIDED, however, and it is expressly stipulated, that the Board shall have power, upon reasonable cause shown, to extend by written certificate either of the periods hereinbefore in this article prescribed.

III.

The Railroad Company shall begin or continue the construction of the new railroad within three months after it shall have obtained the consents aforesaid, or such of them as shall be necessary as aforesaid and shall complete the construction of the railroad and begin its operation within five years after such construction shall be begun or continued.

In the case the Railroad Company, within the period of three months after it shall have obtained the consents necessary as aforesaid, shall not have begun or continued the actual construction of the new railroad, or if, after having begun or continued such construction, it shall suspend the same prior to the completion thereof for a period exceeding three months, or if it shall not complete such construction and begin the operation of the new railroad within the said period of five years, then and in that case, the Board, upon a written notice to be delivered to the Railroad Company, may annul the franchise hereby granted as to any part of the new railroad not then completed and in

operation; PROVIDED, however, that the Board shall have the power, upon reasonable cause shown, to extend by written order any of the periods in this article prescribed; PROVIDED, further, however, that such extension or extensions shall not in all exceed five years; and PROVIDED, further, that additional time shall be allowed by way of extension of any period for such commencement or continuance of construction or for the completion thereof, or for the commencement of operation of the new railroad equal to the total period of delay caused by injunction or by necessary proceedings for condemnation of real estate, easements or other property, so far as such proceedings shall necessarily prevent the Railroad Company from prosecuting such construction, but no delay to be so allowed for unless, during the same, such proceedings shall be diligently prosecuted by or for the Railroad Company; and PROVIDED, further, that in no case shall such delay be deemed to begin until the Railroad Company shall have given written notice to the Board of the injunction or other occasion of delay and delivered to the Board copies of the injunction or other orders causing delay and of such of the papers upon which the same shall have been granted as shall have been served upon the Railroad Company, and unless, upon the request of the Board, the Railroad Company shall in writing consent that the Board, either in its own name as a party or in the name of the City of New York as a party, may intervene in any such injunction proceedings or other suit or proceeding; and PROVIDED, further, that in case of annulment of any part of the franchise the Railroad Company shall have no right to any return of payments which it shall have made to the City by way of rental or otherwise.

IV.

The Railroad Company shall pay to the City for the franchise to construct and maintain the new railroad over the East river between bulkhead lines as heretofore determined by the War Department of the United States, the sum of One hundred dollars (\$100) for each year, beginning on the date on which the Railroad Company shall first commence the actual operation

of the new railroad (but such date to be not later than the last day on which the Railroad Company shall be bound to begin such operation) and ending on the day twenty-five (25) years next thereafter. The Railroad Company shall further pay to the City for the rights, franchises and licenses hereby granted the sum of five (5) cents per annum for each linear foot of single track of the new railroad, which at the dates when the respective payments are due shall be constructed or which the Railroad Company shall be bound to have then constructed, during the period beginning on the date when the Railroad Company shall first commence actual operation of the new railroad (but not later than the last day on which the Railroad Company shall be bound to begin such operation) and ending on the day ten (10) years next thereafter, and ten (10) cents per annum for each linear foot of such single track during the period beginning on the last day of such ten (10) years and ending on the day fifteen (15) years next thereafter. In computing the length of the tracks on which payments are to be made as aforesaid both main tracks and side tracks shall be included; but tracks shall be excluded which are used exclusively for switching and storage of cars and which are situated wholly within yards or terminals belonging or leased to the Railroad Company; and there shall also be excluded such tracks as rest upon the portions of the bridge directly over the East river, Little Hell Gate and Bronx Kills. The length of the said portions of the bridge shall be determined by ascertaining the distance from the bulkhead line as heretofore determined on one shore to the bulkhead line as heretofore determined on the other shore, at points vertically under the bridge. The Railroad Company, in addition to the payments hereinbefore provided, shall pay annually the reasonable value of its use and occupation of the portions of ground upon the said Ward's Island and Randall's Island permanently occupied by the abutments, piers and other supports of the bridge or elevated structure and of its use and occupation of the portions of overhead space occupied by such bridge or elevated structure. The time for such payment shall be computed from the date of the first occupation of the ground of Ward's or Randall's Island for any

purpose of such bridge or elevated structure. The amount of such annual payments may be agreed upon in writing by the Railroad Company and the Board of Commissioners of the Sinking Fund of the City. If such agreement shall not be made within six months after such date of the first occupation of the ground as aforesaid, then the rates of such payment shall be prescribed by the Board of Commissioners of the Sinking Fund and, as so prescribed, shall be paid by the Railroad Company, PROVIDED, that, if the Railroad Company shall claim that the amount prescribed is unreasonable, it shall have the right, notwithstanding such payment, to recover back from the City the amount of the excess, if any, of its payment over and above the amount which shall be reasonable, and the City shall repay to the Railroad Company the amount of such excess. Two rates shall be agreed upon or prescribed as aforesaid, the first for the period which shall begin on the date of the first occupation of the ground on Ward's or Randall's Island for any purpose of such elevated structure and shall end ten (10) years from and after the date when the Railroad Company shall first commence the actual operation of the new railroad (but not later than the last day on which the Railroad Company shall be bound to begin such operation) and the second rate for the period of fifteen (15) years which shall begin on the last day of such first period and end on the day fifteen (15) years next thereafter. In case either of the said rates shall be prescribed, not by agreement, but by the Board of Commissioners of the Sinking Fund as aforesaid, and if the Railroad Company shall, as aforesaid, object that the rate is unreasonable, then the rate, if any, which shall be ascertained to be reasonable in any suit or proceeding brought by the Railroad Company as aforesaid, shall be deemed to be the reasonable rate for the remainder of the said period ending on the last day of the said period of ten (10) years or for the said period of fifteen (15) years as the case may be. The payments hereinbefore provided with respect to Ward's Island and Randall's Island are to be limited to amounts which are reasonable for the occupation and use of the estate and title of

the City in the property occupied or used as aforesaid. In determining what amounts shall be reasonable, due regard shall be had to such estate and title.

All such payments shall be made to the Comptroller of the City in equal payments at the end of each quarter year on the first days of January, April, July and October in each year.

The amounts to be paid by the Railroad Company as aforesaid shall be readjusted at the end of the first period of twenty-five (25) years, and shall thereafter be readjusted at intervals of twenty-five (25) years. The amounts to be paid by the Railroad Company at the end of the first period and at the end of each successive period of twenty-five (25) years shall be determined as follows, to wit: Each such determination shall be had upon the application of either the Railroad Company or the Board or any authority which shall be authorized by law to act for the City in place of the Board. Such application shall be made at any time not earlier than two years and not later than one year before the expiration of the preceding period of twenty-five (25) years. The determination shall be sufficient if agreed to in writing by the Railroad Company and the Board or such other authority in its place. If the Railroad Company and the Board or such other authority in its place for the City shall not reach such agreement on or before the day one year before the expiration of such preceding twenty-five (25) years period, then the rate of compensation for such succeeding twenty-five years' period shall be reasonable; and either the City (by the Board or such other authority in its place) or the Railroad Company shall be bound, upon request of the other, to enter into a written agreement with such other fixing the rate of such compensation at such amount as shall be reasonable; and if the parties shall not forthwith agree upon what is reasonable, then they shall enter into a written agreement fixing such rate at such amount as shall be determined by the Supreme Court of the State of New York; and either party may in such case apply to the said Court to fix such rate. If, in any case, the rate shall not be fixed prior to the commencement of such succeeding twenty-five years' period, then the Railroad Company shall pay the rate theretofore pre-

vailing until the new rate shall be determined, and shall then make up to the City the amount of the excess of the rate then determined over the previous rate. Nothing herein contained shall be deemed to determine or affect the basis of any such readjustment of amounts to be paid, it being intended that such basis shall be completely open to either the City or the Railroad Company whenever any such readjustment is to be made, except that any such readjusted amount shall never be less than the greatest corresponding amount provided herein.

The Board shall certify to the Comptroller the dates from which the payments herein provided for shall respectively be computed.

V.

The new railroad wherever the same shall intersect roads, streets or avenues shall be constructed above or below the grade thereof and in every case so as to permit the convenient use by the public of such street or avenue. The City shall be entitled to require vertical clearances for streets crossing under its route of not less than twelve nor more than fourteen feet and for streets crossing above the route not less than eighteen feet. The City shall also be entitled to require solid floor construction on all bridges crossing streets. In crossing Ward's Island and Randall's Island the railroad shall be upon an elevated structure in continuation of the bridge over the East river; and the under side of the roadway of such elevated structure over the said islands shall be at a height of not less than thirty (30) feet above the present natural grade; and the Railroad Company shall have the right upon the said islands to construct all necessary or proper piers, columns and other supports for the elevated structure and all necessary or proper foundations therefor. In case of tunnel construction under a street, there shall be at least four (4) feet between the grade of the street and the exterior surface of the arch or cover of said tunnel. The road bed, except on bridges, shall be ballasted with a sufficient quantity of either blast furnace slag or broken stone of a hard durable quality.

The Railroad Company shall in the course of its construction and at its own expense, maintain and care for all underground and overground structures (including pipes, wires and other conduits) in its route or directly interfered with by its construction; and any necessary interference with underground or overground structures shall be subject to reasonable regulation by the department, if any, of the government of the City in control or charge thereof.

The Railroad Company shall observe all reasonable regulations which shall be prescribed by any lawful authority tending to prevent the throwing, deposit or dropping of noxious or offensive objects, substances or things from the portion of the new railroad crossing the East river, Ward's Island and Randall's Island and other public property.

The bridge across the East river shall in all respects conform with the provisions of the said act of the legislature granting the right to build the same.

The Railroad Company shall make good to the City all damage which shall be done to the property of the City and shall make good to every owner of property abutting upon the new railroad or which shall be injured by the work of construction or by operation thereof, all damage which shall be done to such abutting or injured property through any fault or negligence of the Railroad Company or any successor thereof or of any contractor, sub-contractor or other person in the course of any employment upon the construction or operation of the new railroad or any part thereof. The Railroad Company shall save harmless the City of and from all claims lawfully made against the City by reason of any act or proceeding of the Railroad Company hereunder. The Railroad Company shall keep its structure in good order and where the same crosses public property it shall have such access as may be reasonably necessary in order to maintain and repair the same.

All plans for, and the method of doing, the work including necessary interference with roads, streets, avenues or other public property during construction, shall, from to time, be subject

to the approval of the Board which shall be given when reasonably requested. All necessary permits for work upon roads, streets or avenues or other public property and other departmental permits so far as any shall be necessary shall be respectively granted by the presidents of the proper boroughs or other officers as provided by law.

VI.

The motive power to be used upon the new railroad shall be steam, with the right to the Railroad Company to substitute therefor electricity; but any other motive power may at any time hereafter be substituted for steam or electricity upon the consent of the Board and the Railroad Company. If the Railroad Company shall use steam and if, by reason of increased density of population along the line of the new railroad, such use of steam shall constitute a nuisance or be dangerous to the residents along the route, or materially depreciate the value of property along the route, then the Board may notify the Railroad Company that such use constitutes a nuisance, or is, in its opinion, dangerous to the residents along the route or materially depreciates the value of property along the route, and that the public necessity for a change by reason thereof to some other motive power is such that the Railroad Company should make a change, and that the Board accordingly requires the change to be made. The Railroad Company shall thereupon within ninety days notify the Board whether it will change its motive power as required by the Board. If the Railroad Company refuses or neglects to notify the Board within the time above specified, the Board may thereupon apply to the Supreme Court of the State of New York for a writ of mandamus or other proper remedy and the issues shall thereupon be whether in fact such use of steam by the Railroad Company constitutes a nuisance, or is dangerous to the residents along the route or materially depreciates the value of property along the route, and whether the public necessity for such change by reason thereof is such that the Railroad Company should

make the change. In case the Supreme Court upon such proceeding shall decide against the Railroad Company that such use constitutes a nuisance, or is so dangerous or materially depreciates the value of property along the route and that the public necessity by reason thereof is such that the Railroad Company should make the change, and upon a written notice of not less than three years to be given by the Board, the Railroad Company shall change its motive power to electricity or to some other motive power not less convenient to the public.

VII.

The Railroad Company shall itself bear the entire cost of preserving the streets already opened across the route of the Railroad Company from injury or interference with the traffic thereof or with the lawful public use thereof, by the construction or operation of the new railroad under or over the same.

The City reserves the right additionally to open across the said route in the Borough of Queens three streets between Juniper avenue and Johnson avenue, a fourth street between Trains Meadow Road and Jackson avenue and a fifth street between Charlotte avenue and Bowery Bay Road.

The City shall also have the right, but only if and when the public necessity requires, to open across the route of the Railroad Company any new streets other than the five last mentioned; and the Railroad Company shall consent to such opening (but subject to its right without interference to control, maintain and operate its road as herein provided) if and when the public necessity shall require and shall not object to the right of the City to so open them on the ground that the land required therefor is already applied to a public use—Provided, however, and it is expressly agreed that if the Railroad Company shall deny that the public necessity does in fact exist, and shall raise an issue as to the existence of such necessity either in the City's proceedings to acquire title to such street or in some other proper action

or proceeding, and if the Supreme Court shall decide that such public necessity does not exist, then and in every such case the Railroad Company shall not be required to permit the actual use of its land for such street. The determination of the Appellate Division of the Supreme Court, in case an appeal is taken by either party, shall be the decision of the Supreme Court herein intended.

The cost of regulating, grading and paving all streets which shall be opened as herein provided across the route of the Railroad Company, shall be borne and paid by the Railroad Company.

The cost of regulating, grading and paving streets within the meaning of this article shall be deemed to include only the cost of actual construction within the limits of the right of way of the Railroad Company together with the cost of bridges over such streets and the abutments thereof and supports therefor whether such bridges be used to carry the new railroad over streets or to carry streets over the new railroad.

VIII.

It is understood that the intention of the Railroad Company is to use the new railroad principally for the carriage of property; but the Railroad Company shall have the right without restriction to transport over the new railroad passengers, PROVIDED, however, that the Railroad Company shall have no power to carry on merely local traffic unless with the approval of the Board and of the Board of Aldermen and Mayor of the City, and for such additional consideration to be paid to the City as they shall prescribe. Local traffic shall be deemed to include the carriage of passengers or freight between points all within the Boroughs of Brooklyn and Queens or between points all within the Borough of The Bronx.

The new railroad shall be diligently and skillfully operated with due regard to the convenience of the traveling public so long as the franchise hereby granted shall be in force.

IX.

The City shall have a lien upon the franchise and real property of the Railroad Company to secure the payment of such compensation and rental and for the performance of all the other obligations by the Railroad Company hereunder including the obligation to make good to the City damage in the case and as prescribed in Article V hereof. In case of any failure to make such payments as herein prescribed, the lien aforesaid may be enforced by the Board or by any authority which shall be authorized to act for the City in place of the Board, either by entry, foreclosure or other proper proceeding and by sale of such franchise and real property.

The Board may, in its own name, or in the name and behalf of the City, bring action for the specific performance, or may apply by mandamus to compel the performance by the Railroad Company, of the duties and obligations hereby imposed upon the said Company, or any of them. And the Board may, in behalf or in the name of the City, bring action or proceedings to recover possession of any part of the property of the City to be used by the Railroad Company as aforesaid, where such recovery is necessary to the enforcement hereof or to enforce the said lien of the City, or to enforce any part of this contract in the manner provided by Section nine (9) of the Rapid Transit Act, or any other proper action or proceeding.

X.

The Railroad Company will not at any future time oppose—but shall at any time upon the request of the Board consent to—the construction of any rapid transit or street railroad otherwise duly authorized over, along, under or across any portion of any of the said streets, roads or avenues to be occupied by the new railroad where the same shall not actually interfere with the structure or uses of the new railroad as herein authorized.

XI.

The City, the Board, and all duly authorized representatives of the City, shall have the right at all reasonable times, as well during construction as afterwards, to inspect the new railroad and any part thereof, and to enter thereon when necessary for the examination, supervision or care of any property of the City, or of abutting property owners or for any proper purpose. Nothing in this franchise shall be deemed to diminish or affect the sanitary or police jurisdiction which the public authorities shall lawfully have over property in the City.

XII.

The Railroad Company shall have the right to grant, convey, mortgage, assign or transfer the franchise hereby granted, PROVIDED, however, that every grantee, assignee or transferee thereof, not including, however, a mortgagee or mere lienor, but including any purchaser upon foreclosure of or under or by virtue of any provision of any mortgage or lien, shall be a corporation subject to the laws of the State of New York, and shall, upon accepting the grant, assignment or transfer, and before such grant, assignment or transfer shall be valid, assume and agree to perform all of the obligations which by the provisions hereof are assumed by the Railroad Company, and that no such grant, conveyance, assignment or transfer shall relieve the Railroad Company of its obligations hereunder. Such obligations shall be deemed to include all obligations for damages or otherwise and whether such obligations shall have been reduced to judgment or not.

XIII.

If, at any time, the powers of the Board or any other of the authorities herein mentioned or intended to be mentioned shall be transferred by law to any other board, authority, officer or

officers, then and in such case such other board, authority, officer or officers shall have all the powers, rights and duties herein reserved to or prescribed for the Board or other authorities, officer or officers.

In witness whereof this Certificate has been executed by the Board of Rapid Transit Railroad Commissioners for the City of New York by and upon the concurrent vote of at least six of the members of the said Board, and is now attested by its seal and by the signature of its President, who is its presiding officer, and by the signature of its Secretary, this 23d day of June, 1904.

BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS
FOR THE CITY OF NEW YORK.

BY

A. E. ORR, President.

BION L. BURROWS, Secretary.

[SEAL.]

STATE OF NEW YORK, }
COUNTY OF NEW YORK, } ss.

On this 23d day of June, 1904, in the City of New York, in said County, before me personally appeared Alexander E. Orr and Bion L. Burrows, each to me known and known to me to be, the said Alexander E. Orr, the President, and the said Bion L. Burrows, the Secretary of the Board of Rapid Transit Railroad Commissioners for the City of New York; and the said Alexander E. Orr and Bion L. Burrows, being by me duly sworn, did depose and say, each for himself and not one for the other, the said Alexander E. Orr, that he resided in the Borough of Brooklyn in the said City, that he was the President of the said Board and that he subscribed his name to the foregoing Certificate by virtue of the authority thereof, and the said Bion L. Burrows, that he resided in the Borough of Brooklyn in the said City, that he was the Secretary of the said Board and that he subscribed his name thereto by like authority; and both the said Alexander E. Orr and Bion L. Burrows that they knew the seal of the said Board, and that the same was affixed to the foregoing Certificate by the authority of the said Board and of a resolution duly adopted by the same.

H. A. D. HOLLMANN,

[SEAL.]

Notary Public for Kings County, N. Y.
Certificate filed in New York County.

The New York Connecting Railroad Company hereby accepts the foregoing franchise and all the terms, conditions and requirements thereof.

Dated New York, June 29, 1904.

THE NEW YORK CONNECTING RAILROAD COMPANY,

BY

Attest:

FRANK E. HAFF,
Secretary.

[SEAL.]

C. S. MELLEN,
President.

STATE OF NEW YORK,
COUNTY OF NEW YORK, ss.

On this 29th day of June, Nineteen Hundred and Four, at the City of New York, before me personally came Charles S. Mellen and Frank E. Haff, to me known and known to me respectively to be the said Charles S. Mellen, the President and the said Frank E. Haff, the Secretary of The New York Connecting Railroad Company, and being by me duly sworn they did depose, each for himself and not one for the other, the said Charles S. Mellen that he resided at New Haven, in the State of Connecticut, and was the President of The New York Connecting Railroad Company, the corporation named in and which executed the foregoing consent, and that he subscribed his name to the foregoing consent by the authority of the Board of Directors thereof; and the said Frank E. Haff that he resided in the Borough of Manhattan, City and State of New York; that he was the Secretary of the said The New York Connecting Railroad Company and subscribed his name to the foregoing consent by like authority; and both the said Charles S. Mellen and Frank E. Haff that they knew the corporate seal of the said The New York Connecting Railroad Company; that the seal affixed to such consent was such corporate seal, and that the same was affixed to the foregoing consent by authority of the Board of Directors of the said The New York Connecting Railroad Company and pursuant to a resolution adopted by the said Board.

RALPH ROYALL,
Notary Public,
New York County.

[SEAL.]

APPENDIX VII

CERTIFICATE OF THE BOARD

TO THE

NEW YORK AND JERSEY

RAILROAD COMPANY

(SIXTH AVENUE AND NINTH STREET EXTENSIONS)

**Board of Rapid Transit Railroad Commissioners
for the City of New York**

TO

New York and Jersey Railroad Company

CERTIFICATE, DECEMBER 22, 1904.

DECEMBER 22, 1904.

The Board of Rapid Transit Railroad Commissioners for The City of New York does hereby certify as follows:

WHEREAS, the New York and Jersey Railroad Company (which is hereinafter called the Tunnel Company) is a railroad corporation which has been duly incorporated under the laws of the State of New York for the purpose, so declared in its articles of association, of owning and operating the tunnel and railroad in part within the limits of The City of New York formerly of the Hudson Tunnel Railway Company, and of constructing and operating a tunnel railroad in the City of New York (which city is hereinafter called the City) to be connected with a railroad or railroads within the State of New Jersey and thereby forming a continuous line for the carriage of passengers and property between a point or points within, and a point or points without the City, and more particularly a tunnel railroad having its eastern terminus in the block bounded by Christopher, West Tenth, Greenwich and Hudson streets, in the Borough of Manhattan, in The City of New York, and thence extending westwardly and

to be connected with a railroad or railroads in the State of New Jersey, and thus form a continuous line for the carriage of passengers and property between such terminus of the railroad of the Tunnel Company within the City and a point or points upon the lines of such railroads in the State of New Jersey, and other States; and

WHEREAS, The Tunnel Company has been duly authorized by the Board of Rapid Transit Railroad Commissioners for the City of New York, by certificate dated July 10, 1902, with the consent and approval of the Board of Aldermen, the Mayor, the Commissioner of Docks and the Commissioners of the Sinking Fund, to lay down, construct and operate said tunnel and railroad to its proposed terminus in the said block bounded by Christopher, West Tenth, Greenwich and Hudson streets in the Borough of Manhattan; and

WHEREAS, The said Tunnel Company desires to extend its said tunnel and railroad along the route hereinafter mentioned to a point at the intersection of Christopher street and Sixth avenue, and thence with one branch to a terminal at or near the intersection of Sixth avenue and Thirty-third street, and with another branch to a terminal station at or near the intersection of Fourth avenue and Ninth street in the said Borough, as shown upon the plan hereto attached, and pursuant to Section 32 of Chapter 4 of the Laws of 1891 as amended by Chapter 584 of the Laws of 1902 (which entire statute as amended by various Acts and as now in force is hereinafter called the Rapid Transit Act), has made application to the Board of Rapid Transit Railroad Commissioners for the City of New York (which is hereinafter called the Board), for authority to establish, construct and extend its railroad tracks along a certain route from its present terminus at the corner of Greenwich and Christopher streets, in said City, to its proposed terminals at or near the intersection of Sixth avenue and Thirty-third street, and at or near the intersection of Fourth avenue and Ninth street, and to have and maintain at said terminals terminal stations and such terminal and other facilities as may be necessary for the accommodation of the

traveling public, and to construct and operate its railroad along the said route under lands, streets, avenues, highways and public places in the City, with necessary sidings, platforms, stations, facilities for access to the surface and other appurtenances, all as hereinafter particularly set forth, and to transport over the said railroad passengers or freight, or both; and

WHEREAS, The Board by a concurrent vote of at least six of its members has fixed and determined the locations and plans of construction of such extension of the railroad of the Tunnel Company upon such route and of such tracks and facilities, the times within which they shall be respectively constructed, and the compensation to be paid therefor to the City by the Tunnel Company; and

WHEREAS, The Board, by such concurrent vote, has prescribed such terms, conditions and requirements as to the Board appear to be just and proper for the grant hereby made to the Tunnel Company, including the terms, conditions and requirements provided by the Rapid Transit Act, and has included among them a provision that the Tunnel Company shall from the time of the commencement of the operation of such railroad under such a determination, annually pay for such extension to the City a sum or rental for certain periods of years hereinafter mentioned, beginning with the operation of any part of the said extensions of the railroad of the Tunnel Company, and also providing for a readjustment of the amount of such sum or rental at the expiration of such period, and at intervals thereafter of twenty-five years—

NOW, THEREFORE, The Board has authorized and does hereby authorize, but subject, however, to the terms, conditions and requirements hereinafter set forth, the Tunnel Company:

1. To lay down, construct and operate a railway including two tracks, on a route beginning at the terminus of the railway of the Tunnel Company, as at present authorized, at the intersection of Greenwich and West Tenth and Christopher streets, in the Borough of Manhattan, and thence running easterly under

Christopher street to Sixth avenue; thence with one branch under Sixth avenue to a terminal station at or near the intersection of Sixth avenue and Thirty-third street in said Borough, and with another branch crossing diagonally under Sixth avenue to Ninth street and thence easterly under Ninth street to a terminal station at or near the intersection of Fourth avenue and Ninth street, in said Borough.

2. To lay down, construct and operate in connection with its terminal station at or near the intersection of Sixth avenue and Thirty-third street two additional tracks for the convenient operation of its railroad; and also in connection with the said terminal station but not more than two hundred and fifty feet southerly therefrom, and also in connection with the terminal station at or near the intersection of Fourth avenue and Ninth street, but not more than two hundred and fifty feet westerly therefrom, and also (in case the City shall exercise the option hereinafter reserved to it to purchase certain portions of the said tunnel and railroad) in connection with the station at or near the intersection of Christopher street and Sixth avenue, but not more than two hundred and fifty feet westerly therefrom, to lay under Sixth avenue and under Ninth street and under Christopher street as many tracks, sidings and connections as may be found convenient for the operation of the railroad, with the right to use therefor said avenue and said streets to the entire width thereof.

3. To build, maintain and operate subway stations, and the necessary track connections therewith, contiguous to the said tunnel and railroad under Christopher street between the East line of Greenwich street and the East line of Hudson street; at or near the intersection of Christopher street and Sixth avenue; under Sixth avenue at or near its intersections with Fourteenth street, Eighteenth street, Twenty-third street and Twenty-eighth street; and also the said terminal station at or near the intersection of Sixth avenue and Thirty-third street; and also the said terminal station under Ninth street between Broadway and Fourth

avenue; together with stairways leading from such subway stations to the surface of the streets and avenues and also together with a subway leading from said terminal station at Ninth street and Fourth avenue to the station of the Rapid Transit Subway at Fourth avenue and Eighth street.

4. To transport upon the said railways and through the said tunnel persons and property, and to use therefor and in connection therewith all suitable appliances.

5. To maintain and operate under the streets of the routes aforesaid and along the lines of the said railways composing the railroad, telegraph wires and wires, cables, conduits and ways for the distribution of power, heat and light and other appurtenances for the use of the railroad and for no other purpose.

6. To acquire and use for stations or station extensions, power plants, pumping stations, shafts for access to the surface and other necessary purposes of the railroad, private property as the same may be lawfully acquired within the scope of the corporate rights and powers of the Tunnel Company.

7. The Board may by written notice to be given to the Tunnel Company at any time before the construction of its railroad to the said terminal station at or near the intersection of Fourth avenue and Ninth street is completed, require the Tunnel Company to lay down, construct and operate a railway including two tracks extending from said station easterly under Ninth street to a terminal station at or near the intersection of Ninth street and the westerly side of Second avenue; and the Board does hereby authorize the Tunnel Company to lay down, construct and operate such extension of its railway in case it shall give such notice as hereinbefore provided.

The rights hereinbefore granted to maintain and operate the railroad or necessary or convenient for that purpose shall be held by the Tunnel Company in perpetuity, except as may be herein otherwise expressly provided.

Provided, however, and it is expressly agreed that this authorization and the rights and privileges hereby granted are subject to certain terms, conditions and requirements which appear to the Board to be just and proper, and, as so subject, are hereinafter called the franchise hereby granted. The said terms, conditions and requirements are hereby prescribed as follows, to wit:

I.

This certificate will be executed by the Board in four identical originals, so proved as to be entitled to be recorded in the office of the Register of the County of New York and to be filed in the office of the Secretary of State of the State of New York, all of which will be delivered by the Board to the President, Vice-President, Secretary or Treasurer of the Tunnel Company. The franchise hereby granted shall be inoperative and this certificate shall be void unless within sixty days after such delivery or such further period as shall be prescribed in writing by the Board, the Tunnel Company shall have procured three of the said identical originals to be returned to the Board, each of them having an acceptance of the franchise and all the terms, conditions and requirements thereof subscribed at the foot thereof by the Tunnel Company, such acceptance being so proved as to entitle it to be recorded and filed as aforesaid.

II.

The franchise hereby granted shall, if the Board shall so determine, become void unless within six calendar months after the time of the delivery to the Board of the acceptance of this certificate by the Tunnel Company, that company shall, in due and lawful form, obtain or receive the consent of the Board of Aldermen of the City, being the local authority having the control of the portions of the streets and highways upon or under which it is proposed to construct the railroad, together with the approval of the Mayor of the City.

The franchise hereby granted shall, if the Board shall so determine, become void unless within one year after the time of the acceptance of its certificate by the Tunnel Company, that Company shall further and in due and lawful form obtain the consent of the owners of one-half in value of the property bounded on each portion of the streets under or through which the Railroad or any part of the route thereof runs, to the construction and operation of the railroad, or such part thereof, or in case the consent of such property owners cannot be obtained, then the determination of Commissioners to be appointed pursuant to law by the Appellate Division of the Supreme Court in the First Department that such portion of the railroad ought to be constructed and operated, the said determination of such Commissioners when confirmed by the Appellate Division which shall have appointed such commissioners to be taken in lieu of such consent of property owners. Provided, however, and it is expressly stipulated, that the Board shall have power, upon reasonable cause shown, to extend by written certificate either of the periods hereinbefore in this article prescribed.

If the Tunnel Company shall be diligent in prosecuting applications for the consents aforesaid, and shall not have secured the same within the period of one year after its acceptance as aforesaid of this franchise, then and in such case the Tunnel Company shall, after a written notice of three months to the Board, be released from its obligations hereunder, unless within such three months such consent shall have been given.

III.

The Tunnel Company shall begin the construction of the said extensions of the railroad hereby authorized (but not including the said extension from Fourth avenue to Second avenue unless the Board shall so determine and notify the Tunnel Company as hereinbefore provided), within six months after it shall have obtained the consents aforesaid and, within five years after such construction shall be begun, shall complete the construction of the said extensions.

In case the Tunnel Company, within the period of six months after it shall have obtained the consents necessary as aforesaid, shall not have begun the actual construction of the aforesaid extensions of its railroad, or if, after having begun such construction, it shall suspend the same prior to the completion thereof for a period exceeding three months, or if it shall not complete such construction and begin the operation of the railroad to said terminal stations within the said period of five years, then and in either of such cases the Board, upon a written notice to be delivered to the Tunnel Company not less than three months before the action of the Board, may annul the franchise hereby granted as to the railroad from the intersection of Christopher street and Sixth avenue to said terminal stations, and if the Tunnel Company shall not complete the construction and begin the operation of the railroad from the terminus of the railway of the Tunnel Company as at present authorized at the intersection of Greenwich and Christopher streets to Sixth avenue, within the said period of five years, then the Board upon the like written notice may annul the franchise hereby granted as to such portion of said railroad.

The Board shall have the power, upon reasonable cause shown, to extend by written order any of the periods in this article prescribed. Additional time shall be allowed by way of extension of any period for such commencement of construction, or for the completion thereof, or for the commencement of operation of the railroad equal to the total period of delay caused by injunction or by necessary proceedings for condemnation of real estate, easements or other property, so far as such proceedings shall necessarily prevent the Tunnel Company from prosecuting such construction, but no delay to be so allowed for unless, during the same, such proceedings shall be diligently prosecuted by or for the Tunnel Company; and, provided, further, that in no case shall such delay be deemed to begin until the Tunnel Company shall have given written notice to the Board of the injunction or other occasion of delay and delivered to the Board copies of the injunction or other orders and of the papers upon which the same shall have been granted, and unless, upon the request of the Board, the

Tunnel Company shall in writing consent that the Board, either in its own name as a party or in the name of The City of New York as a party, may intervene in any such injunction proceedings, or other suit or proceeding; and provided, further, that in case of annulment of any part of the franchise the Tunnel Company shall have no right to any return of payments which it shall have made to the City by way of rental or otherwise.

IV.

The Tunnel Company shall pay to the City for the rights, franchises and licenses in and under streets hereinbefore granted from Greenwich street to the intersection of Christopher street and Sixth avenue and thence to its terminal stations at or near the intersection of Sixth avenue and Thirty-third street, and also near the intersection of Fourth avenue and Ninth street, together with such extension to Second avenue in case the Board shall determine to require the building and operation of such extension as hereinbefore provided, and also for the right to build and maintain the subway stations hereinbefore mentioned, so far as said stations shall be constructed under said streets or avenues, the following sums of money, to wit:

1. The Tunnel Company shall pay to the City annually the sum of fifty cents per annum for each linear foot of single track of such railway track and of such subway station platforms which shall then be constructed or which the Tunnel Company shall be bound to have then constructed under any such streets or parts of streets within the City of New York during the period beginning on the day when the Tunnel Company shall first commence actual operation of the said extensions (but not later than the last day on which the Tunnel Company shall be bound to begin such operation) and ending on the day ten years after the day when any part of the said extensions of the Tunnel Company are in actual operation; and the sum of one dollar per annum for each linear foot of such tracks and of such subway station platforms during the period beginning on the last day of such period

of ten years and ending on the day when the rentals payable under the above-mentioned franchise of July 10, 1902, shall next thereafter become subject to readjustment under the terms of said franchise. In case additional stations shall hereafter be constructed, additional rental for such station platforms shall be paid, to be computed at the rates above specified.

2. The Tunnel Company shall pay to the City annually, as rental for any vault space occupied by it (as the phrase vault space is hereinafter defined), such a sum as shall be equal to four per cent. upon the valuation of the horizontal area occupied by such vault space, said valuation to be at the same rate per square foot as the valuation of the land, exclusive of buildings, contained in the abutting property, fixed for purposes of taxation for the year 1904.

3. The Tunnel Company shall pay to the City for the rights under streets of the City hereinbefore granted, the further sum of nine thousand dollars (\$9,000) per annum (the same being three per cent. per annum on the gross earnings of said extensions of its railroad, said gross earnings being estimated and fixed for the purposes of this grant at three hundred thousand dollars per annum) for each year, beginning on the date on which the Tunnel Company shall first commence the actual operation of any part of the said extensions (but such date not to be later than the last day on which the Tunnel Company shall be bound to begin such operation) and ending on the day ten years next thereafter.

After the expiration of the said ten years the Tunnel Company, instead of the said sum of nine thousand dollars (\$9,000) per annum, shall pay to the City for the routes under the streets of The City hereinbefore granted, such sum as shall be equal to five per cent. per annum on the estimated annual gross earnings of said extensions of its railroad for the period of years between the date of expiration of the said ten years and the date when the rentals payable under the above mentioned franchise of July 10, 1902, shall next thereafter become subject to readjustment

under the terms of said franchise. The estimated amount of the said gross earnings may be determined by an agreement in writing by the Tunnel Company and the Board. If the Tunnel Company and the Board shall not reach such agreement on or before the day one year before the expiration of such first ten year period, then and in that event the estimated amount of such gross earnings shall forthwith be determined by arbitration in the manner provided in Clause XI. of this certificate. If, at the expiration of the first ten year period, the annual rate thereafter payable shall not have been fixed, the Tunnel Company shall pay the nine thousand dollars (\$9,000) a year as above provided, until the new rate shall be determined, and shall make up to the City the amount of any excess of the annual rate then determined over the said nine thousand dollars (\$9,000).

All payments herein provided for shall be made to the Comptroller of the City in equal payments at the end of each quarter year on the first days of January, April, July and October in each year.

The annual amounts to be paid by the Tunnel Company as aforesaid shall be readjusted at the end of the last mentioned period of years, and shall thereafter be readjusted at intervals of twenty-five years, so as to make such readjustment co-temporaneous with the readjustments to be made under the said franchise of July 10, 1902. The annual amounts to be paid by the Tunnel Company for each and every period of twenty-five years after such first period shall be determined as follows, to wit: Each such determination shall be had upon the application of either the Tunnel Company or the Board or any authority which shall be authorized by law to act for the City in place of the Board. Such application shall be made at any time not earlier than two years and not later than one year before the expiration of the preceding period of twenty-five years. The determination shall be sufficient if agreed to in writing by the Tunnel Company and the Board or such other authority in its place. If the Tunnel Company and the Board or such other authority in its place for the City shall not reach such agreement on or before the day one year before the expiration of such preceding twenty-five years' period, then

the annual rate of compensation for such succeeding twenty-five years' period shall be reasonable; and either the City (by the Board or such other authority in its place) or the Tunnel Company shall be bound, upon request of the other, to enter into a written agreement with such other authority fixing the rate of such compensation at such amount as shall be reasonable; and if the parties shall not forthwith agree upon what is reasonable, then the parties shall enter into a written agreement fixing such annual rate at such amount as shall be determined by the Supreme Court of the State of New York; and either party may in such case apply to the said Court to fix such rate. If, in any case, the annual rate shall not be fixed prior to the commencement of such succeeding twenty-five years' period, then the Tunnel Company shall pay the annual rate theretofore prevailing until the new rate shall be determined and shall then make up to the City the amount of any excess of the annual rate then determined over the previous annual rate.

But in no case shall any amount so readjusted be less than the greatest corresponding amount in force at any time during the preceding period of years.

V.

The railways forming part of the railroad where the same shall occupy parts of streets, shall be in tunnel or tunnels or subways under the streets, and the Tunnel Company may construct the railways under Christopher street and under Sixth avenue, and under Ninth street, hereinbefore mentioned in tunnels or subways containing one or more tracks as it may find most advantageous.

No part of the structure of the railroad except its terminal and other stations shall approach within five feet of the exterior line of any street, except streets which it shall cross, unless the abutting property shall be owned by the Tunnel Company or unless the owner or owners of the property so abutting shall consent. The tunnel or tunnels, except as hereinbefore limited, may be placed in such places under the streets as may be found most convenient.

The uppermost part of said tunnel shall not approach nearer than twenty feet to the surface of Christopher street, nor nearer than three feet to the surface of Sixth avenue, but in Sixth avenue the roof of the tunnel shall be as near the surface of the street as street conditions and grades will permit; provided, however, that the Board may by written notice to be given to the Tunnel Company within one year after the date hereof, require the Tunnel Company to build any portion of its line in Sixth avenue, north of Twenty-third street, at such greater depth below the surface of the avenue, as the Board may fix by such notice. The uppermost part of said tunnel, where it crosses Fifth avenue, shall not be at a higher elevation than five and one-quarter (5.25) feet above the level of mean high water; the uppermost part of said tunnel, where it crosses Broadway, shall not be at a higher elevation than sixteen and three-fourths (16.75) feet above the level of mean high water; the uppermost part of said tunnel, if it crosses Fourth avenue shall not be at a higher elevation at that point than nineteen (19) feet above the level of mean high water; and the uppermost part of said tunnel, if it crosses Third avenue, shall not be at a higher elevation at that point than seventeen and one-fourth (17.25) feet above the level of mean high water.

Except as hereinafter provided, stations and station approaches may be built under streets or through private property to be acquired by the Tunnel Company for the purpose, or both under streets and through private property as aforesaid. The streets under which stations or station approaches are built may include, besides the streets of the route, portions of Hudson street, Greenwich avenue, Sixth avenue, Fourteenth street, Eighteenth street, Twenty-third street, Twenty-eighth street, Thirty-second street, Thirty-third street, Broadway and Fourth avenue; but no part of any of said last mentioned streets or avenues shall be used for a station or station approach at a distance greater than seventy-five feet from the exterior line or side of the street or avenue of the route.

In case any part of the said stations or station approaches shall be within the streets or avenues, and above a horizontal plane

ten feet below the street surface, such space shall be deemed to be vault space within the meaning of this certificate.

The Tunnel Company may locate, construct and operate any one or more of such stations and station approaches at any other point or points along said route in lieu of or in addition to those hereinbefore authorized, provided that the consent and approval of the Board to any such new or changed location shall first have been obtained.

The Tunnel Company shall in the course of construction at its own expense maintain the care of all underground structures; and any necessary interference with underground structures shall be subject to reasonable regulation by the department of the government of the City in control or charge thereof.

No exit from the tunnel at the surface shall be constructed except through private property, unless the Board, by resolution, shall specially approve of an exit or exits situated within one or more of the streets or avenues above mentioned.

The Tunnel Company shall at all times, by suitable bridging or other supports, maintain and support in an entirely safe condition for their usual service and to the reasonable satisfaction of the owners, all elevated railroad structures, street tramways of whatever character, water and gas mains, steam pipes, pneumatic tubes, electric subways, sewers, drains, and all other surface or subsurface structures encountered during the progress of the work. The sidewalks, curbs, areas and stoops along the line of the work must also be protected from any injury; but should any injury occur to any sidewalk, curb, area or stoop, the Tunnel Company shall fully restore the same to as good a condition as existed before the injury was done. Notice is to be given by the Tunnel Company to all companies or persons and the proper city officials owning or having charge of surface or subsurface structures along any part of the work, of its intention to commence operations along such part of the route, at least one (1) week in advance, and the Tunnel Company shall file with the Board at the same time a copy of said notice; and it shall co-operate with the proper officers or officials or other persons lawfully in charge of

such structures and shall furnish them with all reasonable facilities to inspect the methods of caring for their property. Whenever it becomes necessary to cut, move, change, or reconstruct any such surface or subsurface structures, or connections therewith, such work shall be done according to the reasonable satisfaction of the owners of such pipes or other structures, or such persons lawfully in charge thereof, and, should they so desire, by the owners themselves, but at the expense of the Tunnel Company—such expense not to exceed the actual cost of labor and materials used, together with a reasonable allowance for the use of plant and tools not exceeding seven and a half ($7\frac{1}{2}$) per cent. All such work of reconstruction or alteration of surface or subsurface structures if performed by the City or owners or persons lawfully in charge thereof, shall be done with reasonable dispatch, and facilities are to be provided so that said work shall interfere as little as possible with the practical working and use of the railroad of the Tunnel Company. The failure of the City or other such owners or persons lawfully in charge of such structure to make such alterations within what the Board shall determine to be a reasonable time may be considered by the Tunnel Company as a waiver on the part of the City or other such owners or persons of the priority of right to do said work. In the event of the City or other such owners or persons being required to make any alteration to their surface or subsurface structures as above provided, or in case the City or such owners or persons shall consider it necessary or desirable to make any further alterations in, or do any work to or in connection with surface or subsurface structures owned by or lawfully in charge of them, or any of them, at the time the work of the Tunnel Company shall be in progress, the Tunnel Company shall give said City or other owners or persons, all reasonable opportunity to make such alterations or perform such work.

The Tunnel Company shall make good to the City all damage which shall be done to the property of the City by the construction or operation of the railroad, and shall make good to every owner of property abutting upon the railroad, or which shall be injured by the work of construction or by operation thereof, all

physical damage which shall be done to such abutting or injured property through any act or omission of the Tunnel Company or successor thereof, or of any contractor, subcontractor, or other person in the course of any employment upon the construction or operation of the railroad or any part thereof.

The method of construction shall be generally as follows: The tunnels under streets shall be constructed in whole or in part of masonry or of steel or of iron or any two or more thereof combined. Excavations necessary in the course of construction by the Tunnel Company shall be made without disturbing the surface of the streets; provided, however, that the Board may, by resolution, wherever local conditions make excavations from the surface necessary for efficient construction, grant the right to make such excavations from the surface, subject to such conditions and regulations as the Board may prescribe.

The tracks shall be constructed of the most approved plan so as to avoid noise or tremor.

All plans for, and the method of doing, the work, including all plans for stations and station arrangements, shall from time to time be subject to the approval of the Board.

The Tunnel Company, before beginning the construction of any part of the extensions of its railroad hereby authorized, shall file with the Comptroller of the City of New York a bond in the penal sum of two hundred thousand dollars (\$200,000), in such form and with such sureties as shall be approved by the Board, conditioned for the faithful performance by the Tunnel Company of all the conditions and requirements of this certificate, so far as the same shall relate to the construction of the said extensions, or in lieu of such bond shall deposit with the Comptroller securities satisfactory to the Board, to the amount of two hundred thousand dollars.

VI.

The power to be used shall be electricity or such other power (not involving combustion in the tunnel) as may be approved by the Board.

VII.

The plan and profile of the railroad herewith attached are to be deemed a part of this franchise and to be construed with the text hereof. The same shall be substantially followed, but deviations therefrom not inconsistent with the other provisions hereof may be permitted by the Board.

VIII.

The railroad shall be diligently and skilfully operated with due regard to the convenience of the traveling public, so long as the franchise hereby granted shall remain in force.

In case at any time in the opinion of the Board, the Tunnel Company shall fail to carry out the foregoing provision, the burden of proof in any proceedings which may be instituted by any proper authority to compel a compliance therewith shall be upon the Tunnel Company to show that it is discharging the duties and obligations imposed by this section.

IX.

The City shall have a lien upon the franchise and upon the real property of the Tunnel Company under the said streets to secure the payment of such compensation and rental.

In case of any failure to make such payment as herein prescribed, the lien aforesaid may be enforced by the Board either by entry, foreclosure or other proper proceeding and by sale of such franchise and real property.

The Board may, in its own name, or in the name and behalf of the City, bring action for specific performance, or may apply by mandamus or injunction or otherwise, to compel the performance by the Tunnel Company of the duties and obligations hereby imposed upon the said Company, or any of them. And the Board may, in behalf or in the name of the City, bring any action or

proceedings to recover possession of any part of the property of the City to be used by the Tunnel Company as aforesaid, or to enforce the said lien of the City, or to enforce any part of this contract in the manner provided by Section 9 of the Rapid Transit Act or any other proper action or proceeding.

X.

In case The City or the Board shall at any time or times hereafter determine that the portion of the tunnel and railroad hereby authorized under Sixth avenue, between the north line of Ninth street and the south line of Thirty-third street, or the portion under Ninth street east of Sixth avenue, or either of them, is necessary or desirable for use as a part of some municipal system of rapid transit to be owned by the City, The City shall have, and the Tunnel Company, by the acceptance of this instrument, hereby grants to The City the right and option to purchase and take the said portion of the tunnel and railroad hereby authorized under Sixth avenue, between the north line of Ninth street and the south line of Thirty-third street, or the said portion under Ninth street east of Sixth avenue, or either of them, at any time or times after the expiration of twenty-five years from the date when the operation of such portions shall actually begin. In case the City or the Board determines to exercise said option and acquire said portions of the tunnel and railroad hereby authorized, or either of them, The City or the Board shall give the Tunnel Company at least two years' notice in writing; and upon the day fixed by said notice for such acquisition, The City shall pay or tender to the Tunnel Company the value of such portion of the said tunnel and railroad (but not including the franchise hereby granted) as determined by agreement or by appraisal in the manner provided in clause XI of this certificate; such value, however, not to exceed the actual cost in money of the construction of the said portion of said tunnel and railroad, including cost of stations, real estate, and any and all easements, structures and property connected therewith, as the same exist at the time when the said option shall be exercised.

In order that the Board may be fully advised as to the character of the construction of the portions of said railroad under Sixth avenue and under Ninth street and the cost of construction of the same, the Board shall not only have the right to inspect the said portions of said railroad during construction, but shall also have the right to inspect and approve of all materials used therein during the process of construction and otherwise; and the Board shall also have the right from time to time to examine the books, contracts and papers of the Tunnel Company relating to said portions of said railroad for the purpose of ascertaining the actual cost of construction thereof. As soon as said tunnel and railroad is completed under Sixth avenue from Ninth street to Thirty-third street, and under Ninth street east of Sixth avenue, the Tunnel Company shall present to the Board a statement in writing, showing the cost of construction of the said tunnel and railroad. In case the said statement is approved by the Board, both parties shall be estopped from raising any question that the same is the actual cost of construction of the said tunnel and railroad, so far as the same is completed at the date of the said statement. In case the Tunnel Company, after the date of any such statement, shall acquire or construct any other tunnel, railroad, tracks or stations on Sixth avenue, between Ninth street and Thirty-third street, or under Ninth street east of Sixth avenue, or shall acquire or construct any additions or improvements therein, the same shall in every case be constructed with the approval and under the inspection of the Board and with the same right as hereinbefore provided to examine the books, contracts and papers of the Tunnel Company relating thereto, and a statement of the cost thereof shall be furnished to the Board by the Tunnel Company for the same purpose and with the same effect as the statement to be furnished upon the completion of the original construction of the road. In case the Board shall not approve any statement of cost of construction furnished by the Tunnel Company, the actual cost of construction of the work described or referred to in any such statement, shall be determined as soon as possible by arbitration in the manner provided by Clause XI of this certificate.

The value of the said tunnel and railroad under Sixth avenue between Ninth street and Thirty-third street, and under Ninth street east of Sixth avenue, or either of them, may be fixed and determined by an agreement in writing between the Tunnel Company and the Board. If the Tunnel Company and the Board shall not have reached such an agreement on or before the day one year before the date fixed for the purchase of the said tunnel and railroad by notice as aforesaid, then and in that event the value of the said tunnel and railroad shall forthwith be determined by arbitration in the manner provided in Clause XI of this certificate.

The right and option hereinbefore mentioned to purchase the said portions of the said railroad is hereby expressly reserved by and for The City, and may be exercised on its behalf by the Board, or by such other authority representing The City as is now or may hereafter be vested with the power to purchase said portions of the said railroad or either of them. Upon the exercise of such option in the manner hereinbefore provided, the title to the said portion of the said tunnel and railroad so purchased, with all additions thereto and improvements thereon, shall forthwith revert to and vest in The City, free of and from all liens, mortgages or other incumbrances of what nature soever, and all right, title and interest of the Tunnel Company, or its successors or assigns, in such portion of the said tunnel and railroad shall at once cease and determine.

And the Tunnel Company, by the acceptance of this instrument, covenants and agrees that it will not hereafter question the right, power or authority of The City to exercise the said option or to acquire or hold such portions of the said tunnel or railroad, or either of them, whether any such right, power or authority be now possessed by The City or shall be hereafter acquired by it by virtue of future legislation or otherwise.

The option hereinbefore granted and the aforesaid covenant of the Tunnel Company is one of the principal moving considerations of The City in making the grant of the franchise hereby granted; and the Tunnel Company, by the acceptance of this instrument, is estopped from questioning the authority of The City to insert the

said option as one of the terms and conditions of this grant or to exercise the said option or to acquire or hold said portions of said railroad. And the Tunnel Company, by the acceptance of this instrument, covenants for itself, its successors and assigns, that it will make any and all such further grants, conveyances or other instruments of assurance in order to carry out the purposes of this agreement, as may be demanded by The City or the Board.

In case The City shall purchase and acquire such portions of the railroad in Sixth Avenue and Ninth Street, or either of them, under the option herein granted, all payments by way of rental or otherwise, applicable to the portion so acquired, herein required to be made by the Tunnel Company shall, upon the date of consummation of such purchase, cease and terminate, and, upon payment in full of all rentals due in respect to the portion of the railroad so purchased up to the date of such purchase, the Tunnel Company shall be relieved from any further payment of rentals or otherwise in respect thereto. The proportion of rentals and other payments herein before provided for, properly applicable to the portion of the railroad so purchased, shall be determined by agreement between the Tunnel Company and the Board, and, if they are unable to agree, by arbitration in the manner provided in clause XI. of this certificate.

XI.

In case it should be necessary to submit to arbitration any question arising under the provisions of Clause IV. or Clause X. of this agreement, such arbitration shall be conducted as follows: Either The City or the Tunnel Company may give notice to the other that it requires the matter arising under one or the other of said Clauses, as the case may be, to be submitted to arbitration, and shall at the same time name an arbitrator, and accompany the notice by a written acceptance by the arbitrator of the appointment. Within ten days after the receipt of such notice, the party receiving the same shall name an arbitrator, and give written

notice of such nomination to the other party, the notice to be accompanied by a written acceptance by the arbitrator of the appointment. If the party to whom notice of arbitration is given shall not so nominate an arbitrator, who shall so accept, then the arbitrator named by the party giving the first notice shall be the sole arbitrator. Any vacancy in the office of an arbitrator so appointed shall be filled by the party which shall have been appointed the last incumbent thereof, and within five days after notice of the vacancy, during which five days the running of other periods of time prescribed for or in course of the arbitration shall be suspended. If not so filled, or if notice of the appointment be not given within such five days, the remaining arbitrator shall be the only arbitrator. The two arbitrators thus appointed shall select a third arbitrator; but if they fail to agree upon such third arbitrator within fifteen days after the date of the appointment of the second arbitrator appointed, the third arbitrator shall be nominated by the Executive Committee for the time being of the Chamber of Commerce of the State of New York; or if within thirty days after being requested by either of the parties to make such nomination, the said Committee shall decline or fail to make a nomination, then an arbitrator shall be named by the Executive Committee for the time being of the Association of the Bar of the City of New York. The arbitrators shall hear the parties and their counsel or any statements or evidence which the parties or either of them desire to submit, and may resort to any other sources of information in reference to the question submitted for determination. Within thirty days after the appointment of the third arbitrator, the arbitrators shall make their determination in writing in duplicate, one to be delivered to the Board and the other to the Tunnel Company. Any determination by a majority of the arbitrators to be final and conclusive. All fees and expenses of arbitrators shall be borne and paid equally by the Board and the Tunnel Company, by both of whom every such arbitrator shall be deemed to be employed. Every such arbitrator shall, before proceeding to consider the matter, be sworn as nearly as may be in the same manner as referees in actions at law are required to be sworn.

XII.

The Tunnel Company will not at any future time oppose, but shall at any time upon the request of the Board consent to, the construction of any rapid transit or street railroad over, along or under any portion of any of the said streets to be occupied by the Railroad of the Tunnel Company aforesaid, where the same shall not actually interfere with the structure of the Tunnel Company as herein authorized.

XIII.

The City, the Board and all duly authorized representatives of the City, shall have the right at all reasonable times to inspect the Railroad and any part thereof, as well during construction as afterwards, and to enter thereon when necessary for the examination, supervision or care of any property of the City, or of abutting property owners, or for any proper purpose. Nothing in this franchise shall be deemed to diminish or affect the sanitary or police jurisdiction which the public authorities shall lawfully have over property in the City.

XIV.

The Tunnel Company shall, from time to time, at its own expense maintain and strengthen all parts of the Railroad which shall be under any street or avenue, so that the same shall safely support any structure superimposed or which shall be superimposed thereon by the City or under its authority or under any other public authority.

XV.

The Tunnel Company shall have the right to grant, convey, mortgage, assign or transfer the franchise hereby granted, provided, however, that every grantee, assignee or transferee thereof, not including, however, a mortgagee or mere lienor, but including any purchaser upon foreclosure of or under or by virtue of any

provision of any mortgage or lien, shall be a corporation subject to the laws of the State of New York, and shall upon accepting the grant, assignment or transfer, and before such grant, assignment or transfer shall be valid, assume and agree to perform all of the obligations which by the provisions hereof are assumed by the Tunnel Company, and that no such grant, conveyance, assignment or transfer shall relieve the Tunnel Company of its obligations hereunder.

And provided further that, in case the Tunnel Company or any successor or future owner of the franchise shall be consolidated with or merged into any other corporation, the obligations of the Tunnel Company or such successor or future owner hereunder shall remain unaffected and this franchise shall pass to such new corporation only if the agreement or act of consolidation or merger shall effectively provide that the new consolidated or merging corporation shall assume all such obligations, or if such act or agreement shall not so provide, then if and when such new consolidated or merging corporation shall in writing expressly assume such obligations—it being the express intention of this franchise that no change in the incorporation of the Tunnel Company or of any such successor or future owner or in the ownership or control of the franchise hereby granted or of any part thereof, shall diminish or affect the obligations of the holder of the same.

XVI.

If, at any time, the powers of the Board shall be transferred by law to any other board, officer or officers, then and in such case such other board, officers or officer shall have all the powers, rights and duties herein reserved to or prescribed for the Board.

XVII.

Inasmuch as it is provided in Article V of said certificate of this Board, dated July 10, 1902, that the uppermost part of the tunnel in Greenwich Street north of the north line of Barrow Street, and

in Christopher Street and West Tenth Streets, opposite the terminal station of the Tunnel Company, may come within not less than thirty inches of the surface of the roadway or sidewalk, and in consideration thereof it was provided in Article IV that the Tunnel Company should pay for such underground portions of Greenwich, Christopher and West Tenth Streets, contiguous to its terminal station aforesaid, \$3,224 per annum for the first ten years and \$6,448 per annum for the next fifteen years, such compensation being for street or vault rights in Greenwich, Christopher and West Tenth Streets aforesaid, at eleven cents per square foot per annum for the first ten years and twenty-two cents per square foot per annum for the next fifteen years; and, furthermore, it was provided in Article V of said certificate, that the Tunnel Company should keep paved with smooth pavement those portions of Christopher and West Tenth Streets contiguous to its terminal station and that portion of Greenwich Street between the north line of Barrow Street and the south line of West Tenth Street; and, inasmuch as the extensions of the tunnel and railroad of the Tunnel Company herein authorized and provided for will make it necessary to locate said tunnel and railroad under Greenwich, West Tenth and Christopher Streets at such depth below the surface as not to require any encroachment upon or interference with vault space under Greenwich, Christopher and West Tenth Streets, as provided for in said certificate of this Board, dated July 10, 1902; said certificate is hereby amended by striking out the fourth paragraph of Article IV thereof, which requires the payment by the Tunnel Company to the City for such underground portions of Greenwich, Christopher and West Tenth Streets of the sum of \$3,224 per annum for the first ten years and \$6,448 per annum for the next fifteen years, and also by striking out and omitting the fourth paragraph of Article V of said certificate, which requires the Tunnel Company to keep paved with smooth pavement those portions of Christopher and West Tenth Streets contiguous to its terminal station and that portion of Greenwich Street between the north line of Barrow Street and the south line of West Tenth Street and by substituting in place thereof the following provision, that is to say: The Tunnel

Company shall pay to the City for the rights, franchises and licenses in and under Greenwich Street from the north line of Barrow Street to the intersection of Greenwich and West Tenth Streets the sum of fifty cents per annum for each linear foot of single railway track which shall be then constructed or which the Tunnel Company shall be bound to have then constructed under such street within the City of New York during the period beginning on the day when the Tunnel Company shall first commence actual operation of the railroad (but not later than the first day on which the Tunnel Company shall be bound to begin such operation) and ending on the day ten days next thereafter, and the sum of one dollar per annum for each linear foot of such tracks constructed beginning on the last day of such period of ten years and ending on the day fifteen years next thereafter.

IN WITNESS WHEREOF, this certificate has been prepared by the Board of Rapid Transit Railroad Commissioners for The City of New York, by and upon the concurrent vote of at least six of the members of the said Board, and is now attested by its seal and by the signature of its President, who is its presiding officer, and by the signature of its Secretary, this 22d day of December, 1904.

THE BOARD OF RAPID TRANSIT RAILROAD COM-
MISSIONERS FOR THE CITY OF NEW YORK.

By

[OFFICIAL SEAL]

A. E. ORR,
President.

BION L. BURROWS,
Secretary.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On this 27th day of December, 1904, in The City of New York, in said county, before me personally appeared Alexander E. Orr and Bion L. Burrows, each to me known and known to me to be the said Alexander E. Orr, the President, and the said Bion L. Burrows, the Secretary, of the Board of Rapid Transit Railroad Commissioners for The City of New York, and the said Alexander E. Orr and Bion L. Burrows, being by me duly sworn did depose and say, each for himself and not one for the other, the said Alexander E. Orr, that he resided in the Borough of Brooklyn, in the said City; that he was the President of the said Board, and that he subscribed his name to the foregoing certificate by virtue of the authority thereof; and the said Bion L. Burrows, that he resided in the Borough of Brooklyn, in the said City; that he was Secretary of the said Board, and that he subscribed his name thereto by like authority; and both the said Alexander E. Orr and Bion L. Burrows that they knew the seal of the said Board and that the same was affixed to the foregoing certificate by the authority of the said Board and of a resolution duly adopted by the same.

H. A. D. HOLLMANN,

Notary Public,

For Kings County, N. Y.

[SEAL]

Certificate filed in New York County.

The New York and Jersey Railroad Company hereby accepts the foregoing franchise and all the terms, conditions and requirements thereof.

Dated New York, December 27, 1904.

THE NEW YORK AND JERSEY RAILROAD COMPANY.

By W. G. Mc ADoo, President.

[CORPORATE SEAL.]

C. W. KING, Secretary.

STATE OF NEW YORK, COUNTY OF NEW YORK, ss.:

On this 27th day of December, 1904, at The City of New York, before me personally came William G. McAdoo and Charles W. King, to me known and known to me respectively to be the said William G. McAdoo, the President, and the said Charles W. King, the Secretary, of New York and Jersey Railroad Company, and being by me duly sworn they did depose and say, each for himself and not one for the other, the said William G. McAdoo, that he resided at Yonkers, in the State of New York, and was the President of the New York and Jersey Railroad Company, the corporation named in and which executed the foregoing consent, and he subscribed his name to the foregoing consent by the authority of the Board of Directors thereof; and the said Charles W. King, that he resided in the Borough of Brooklyn, City of New York, in the State of New York; that he was the Secretary of the said New York and Jersey Railroad Company and subscribed his name to the foregoing consent by like authority; and both the said William G. McAdoo and Charles W. King that they knew the seal of the said New York and Jersey Railroad Company; that the seal affixed to such consent was such seal, and that the same was affixed to the foregoing consent by authority of the Board of Directors of the said New York and Jersey Railroad Company and pursuant to a resolution adopted by the said Board.

CLARENCE J. S. DEVERE,

[SEAL.]

Notary Public, 37,
New York County.

(In the originals the plan and profile is annexed).

[46,761a]

REPORT
OF THE
CHIEF ENGINEER

NEW YORK, January 1, 1905.

ALEXANDER E. ORR, *President*,

Board of Rapid Transit Railroad Commissioners,
City of New York.

Sir:—Pursuant to your instructions, I present below a report on the work done under the direction of the engineering department of the Board during the calendar year 1904.

This year has witnessed the completion of the greater part of Contract No. 1, and the beginning of operation. The various steps in the development of the work and its progress under the terms of the contract have been set forth in the three previous reports of the Chief Engineer to the Board, but in view of the substantial completion of this contract it will not be amiss to briefly review them.

The contract was offered by public advertising beginning November 15, 1899. The actual document consisted of two distinct contracts, one for construction, including full and complete specifications describing minutely the character of the work to be done, the other the lease covering the period of operation. The contract was accompanied by four sets of drawings, 259 in number. These sets of drawings were denoted A, B, C and D. The A drawings were the maps and profiles on 35 sheets, the B drawings, 46 in number, showed the sewer reconstruction, the C drawings, 36 in number, explained the details of construction, while the D drawings, numbering 142, showed the surface and sub-surface structures and geographical conditions. These last drawings were not guaranteed as being accurate, but were offered to contractors as embracing such information as the engineering department had gathered together.

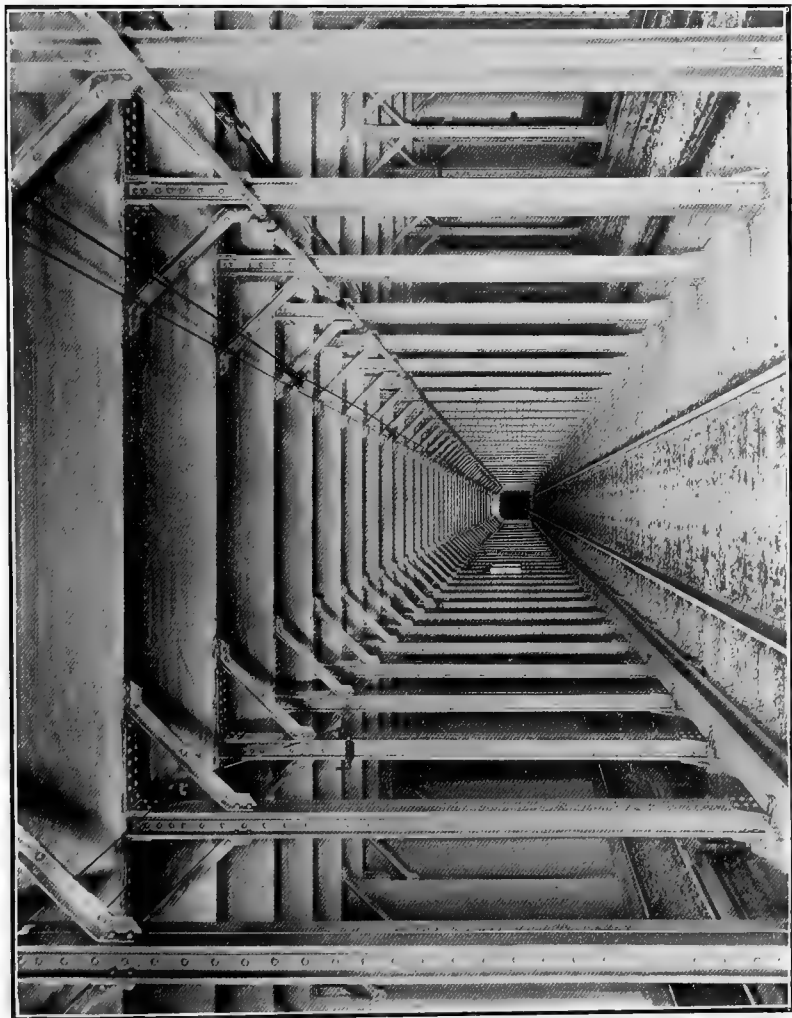
The railway thus described began with a loop around the General Post Office at Broadway and Park Row, and extended with four tracks beneath Park Row, Centre street, Elm street,

Lafayette place, Fourth avenue, Forty-second street and Broadway to about One Hundred and Third street. At this point two lines diverged, the west side line continuing under Broadway to Fort George, except for a viaduct over the Manhattan Valley between One Hundred and Twenty-second street and One Hundred and Thirty-fifth street, and from Fort George by viaduct over Ellwood street and the Kingsbridge road to Bailey avenue at Kingsbridge. The east side line led from the junction at One Hundred and Third street beneath private property to One Hundred and Fourth street, and then under that street, Central Park, Lenox avenue, the Harlem river, One Hundred and Forty-ninth street to Third avenue, and thence by viaduct over Westchester avenue, Southern boulevard and Boston road to Bronx park. Both the west side and east side lines were double track the whole length. The track mileage of the contract railway was, exclusive of sidings:

	UNDERGROUND	VIADUCT	TOTAL
4 track	7.26	....	7.26
2-track.....	7.75	5.80	13.55

The total length of route was 20.81 miles.

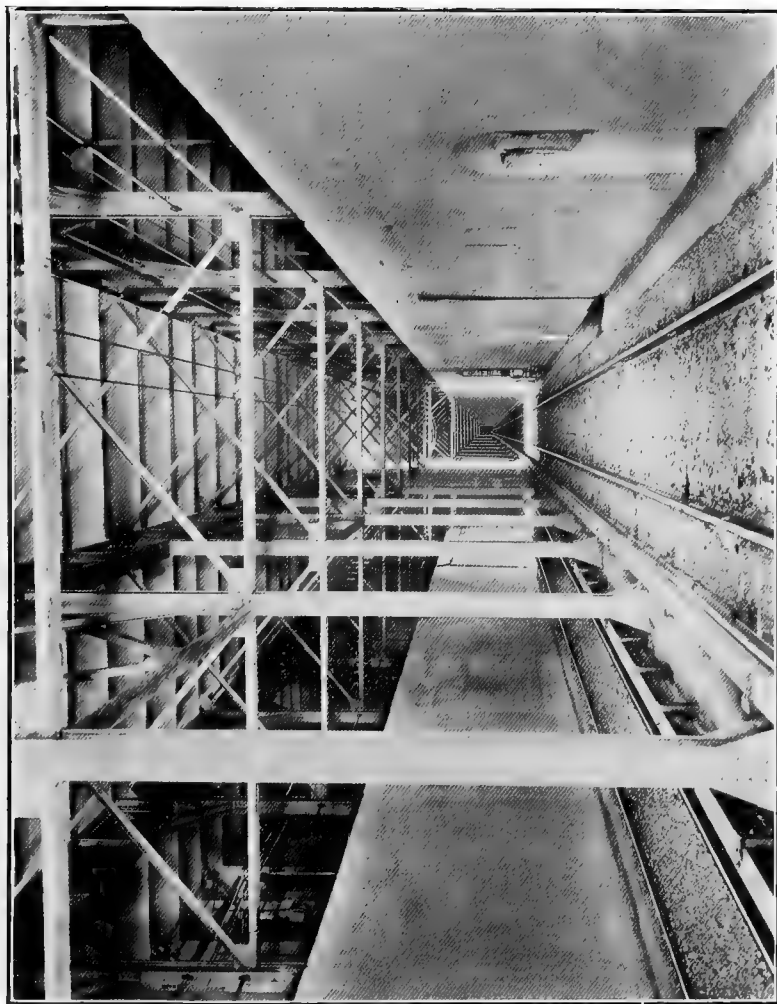
Bids were opened on January 15, 1900, and on February 21, 1900, the contract was signed by Mr. John B. McDonald and his financial syndicate, the Rapid Transit Subway Construction Company, Mr. August Belmont, President. The price was a fixed lump sum of \$35,000,000, to cover the total cost of the railway complete, ready for operation. In addition to this lump sum, interest during construction was to be funded, and added to the contract price, to give the total amount on which the lessee company is to pay interest as rental. The Contractor was also to furnish at his own expense all the necessary equipment, including cars, power plant, signals, etc.



TYPICAL FOUR-TRACK CONSTRUCTION.



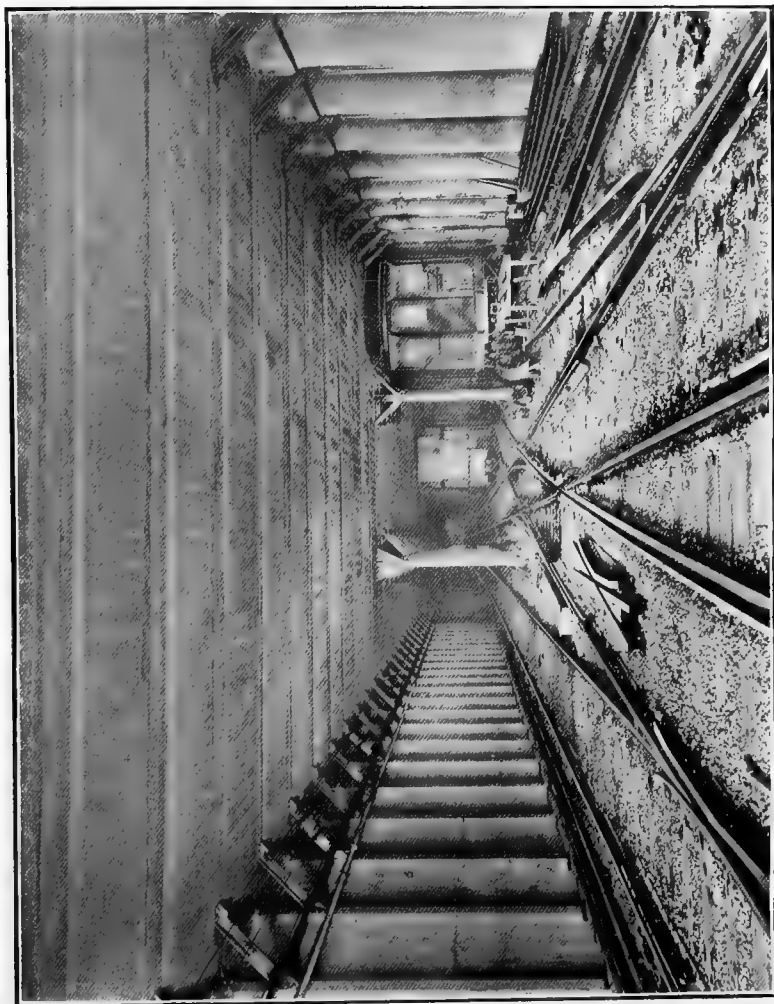
FORTY-FIRST STREET AND PARK AVENUE.



ONE HUNDRED AND FOURTH STREET JUNCTION.



BROADWAY AND COLUMBIA UNIVERSITY STATION.



ONE HUNDRED AND FORTY-THIRD STREET AND LENOX AVENUE.

As required by the contract, a formal beginning of work took place in front of the City Hall on March 24, 1900. Immediately thereafter the Contractor began his preparations for the actual handling of the work. The total route was divided into fifteen sections, whose lengths were determined by local conditions fixing the character of construction, and bids from sub-contractors for the several sections were invited. As let, these sections and the sub-contractors were as follows:

SECTION	LENGTH, MILES	LIMITS	CHARACTER	SUB- CONTRACTOR	DATE OF COM- MENCING WORK
1	0.50	Post Office Loop to cen- ter Chambers St.	4-track Subway	Degnon-McLean Contracting Co.	March 24, 1900
2	1.13	Center Chambers St. to center Great Jones St.	"	Degnon-McLean Contracting Co.	July 10, 1900
3	1.50	Center Great Jones St. to center 33d St., plus 100 ft.	"	Holbrook, Cabot & Daly Con- tracting Co.	Sept. 12, 1900
4	0.38	Center 33d St., plus 100 ft., to center 41st St.	"	Ira A. Shaler	Sept. 12, 1900
5-A	0.82	Center 41st St., Park Ave. to 42d St., to Broad- way, to center 47th St.	"	Degnon-McLean Contracting Co.	Feb. 25, 1901
5-B	0.69	Center 47th St. to center 60th St.	"	Naughton & Co.	Sept. 19, 1900
6-A	1.20	Center 60th St. to cen- ter 82d St.		William Bradley	Aug. 22, 1900
6-B	1.07	Center 82d St. to cen- ter 104th St.			

SECTION	LENGTH, MILES	LIMITS	CHARACTER	SUB- CONTRACTOR	DATE OF COM- MENCING WORK
7	0.87	Portal of Tunnel at 103d St. to center 110th St. (Lenox Ave.)	2-track Subway	Farrell & Hopper	Oct. 2, 1900
8	1.28	Center 110th St. to center 135th St., plus 100 ft.	"	Farrell & Hopper	Aug. 30, 1900
9-A	0.78	From point north of center of 135th St. and Lenox Ave. to East Building Line of Gerard Ave. on East 149th St.	"	McMullen & McBean	Sept. 10, 1901
9-B	0.72	From East Building Line of Gerard Ave. on 149th St. to point beyond Third Ave. where Steel Viaduct begins		J. C. Rodgers	June 13, 1901

SECTION	LENGTH, MILES	LIMITS	CHARACTER	SUB- CONTRACTOR	DATE OF COM- MENCING WORK
10	3.13	East Side Viaduct. From west side Brook Avenue (Building Line) to Bronx Park and 182d St.	2-track Viaduct	Terry & Tench Construction Co. (also for Sections 12 and 15)	Aug. 19, 1901
		"	"	E. P. Roberts (for Viaduct foundations)	Aug. 19, 1901
11	1.07	Center 104th St. to south side of 125th St., plus 10 ft. on Broadway	2-track Subway	John Shields	June 18, 1900
12	0.41	Manhattan Valley Viaduct. South Side (Building Line) 125th St., plus 10 ft., to north side (Building Line) 133d St.	2-track Viaduct	Terry & Tench Construction Co. (also for Sections 10 and 15.)	June 1, 1901
		"	"	E. P. Roberts (for Viaduct foundations and stonepiers)	June 1, 1901

SECTION	LENGTH, MILES	LIMITS	CHARACTER	SUB- CONTRACTOR	DATE OF COM- MENCING WORK
13	2.42	North side 133d St. to center 182d St., plus 100 ft.	2-track Subway	L. B. McCabe & Brother	May 14, 1900
14	0.81	Center 182d St., plus 100 ft., to Hillside Ave.	'	L. B. McCabe & Brother	Mar. 27, 1901
15	1.98	West Side Viaduct. Hill- side Ave. to the Ter- minus near Bailey Ave.	2-track Viaduct	Terry & Tench Construction Co. (also for Sections 10 and 12.)	Jan. 19, 1903
		"	"	E. P. Roberts (for Viaduct foundations.)	Jan. 19, 1903

With the exception of the Harlem river tunnel the sub-contracts were let at unit prices, but at rates and under terms not known to the engineering department. Of the above sub-contractors all except Messrs. Ira A. Shaler and L. B. McCabe & Brother completed or will complete their sections. Mr. Shaler was unfortunately killed during construction, while Messrs. L. B. McCabe & Brother were replaced on December 1, 1901, by Mr. Rufus C. Hunt.

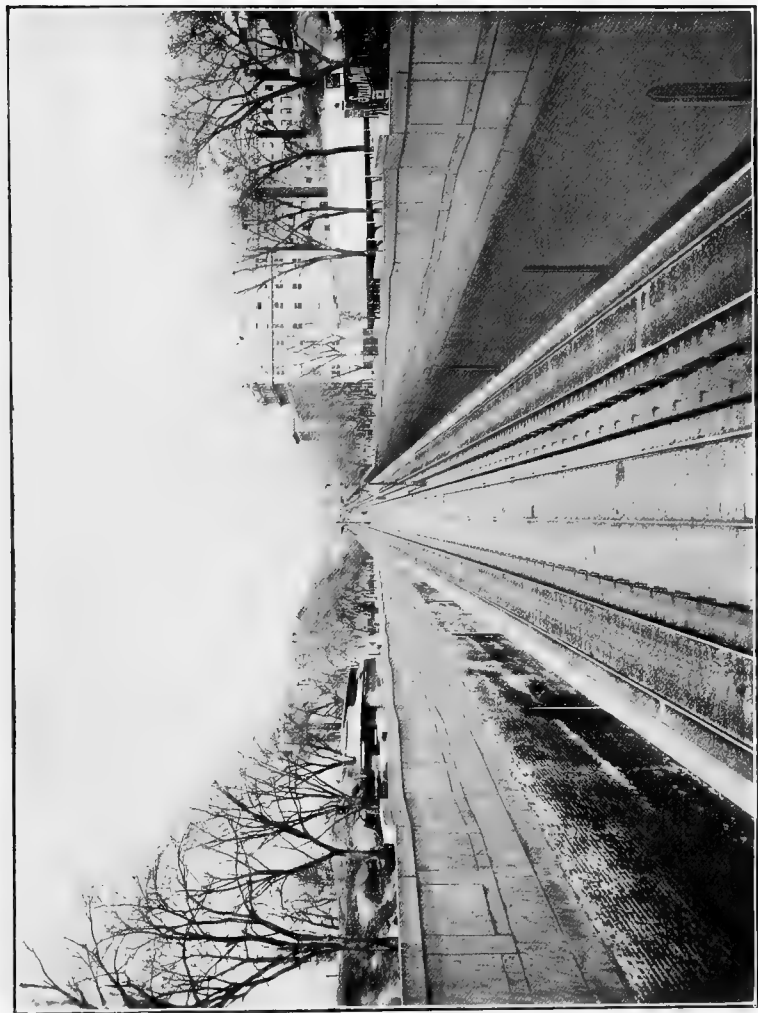
In addition to these sub-contractors for the main structure of the subway, additional sub-contracts for material or work have been let from time to time. The principal sub-contracts of this class have been:

Steel.....	American Bridge Company.
Cast-iron.....	John Fox & Company.
Cement.....	United Building Material Company.
Asphalt, Waterproofing and Felt	Sicilian Asphalt Paving Company.

STATION WORK.

Tiling.....	Manhattan Glass Tile Company. Howden Tile Company. John H. Parry. Alfred Boote Company.
Brickwork	Dowd & Maslen.
Plumbing	Tracy Plumbing Company.
Kiosks	Hecla Iron Works.
Concrete Stairs	Turner Construction Company.
Faience and Ornamental Terra Cotta	Atlantic Terra Cotta Company. Grueby Faience Company. Rookwood Pottery Company.
Vault Lights	Tucker & Vinton, Inc.
Platforms	Vulcanite Paving Company.

To provide for proper superintendence, the Chief Engineer divided the route into four divisions, placing a division engineer in charge of each, and equipping him with a main office, portable sub-offices along the line, and a staff of engineers and inspectors.



APPROACH TO MANHATTAN VALLEY VIADUCT.



MANHATTAN STREET STATION, MANHATTAN VALLEY VIADUCT.

The work of reconstructing the sewers that were interfered with by the subway was separated from the railway construction and made another division, with a division engineer and staff in charge. Each division was a complete unit, the length of each being determined by local intricacies of details of construction. In addition there was appointed a general inspector of designs in charge of the designing department attached to the Chief Engineer's office, and a general inspector of material with headquarters at Pittsburg. A principal sub-office of the department of inspection of material was established during the first three years at Pencoyd, Pa., but later transferred to Trenton, with resident inspectors at such other points where work from time to time was being fabricated. At Athens, Pa., Baltimore, Md., and Brooklyn, N. Y., sub-offices were established for the inspection of structural steel work, and at Phillipsburg, N. J., Flemington, N. J., and Catasauqua, Pa., for cast-iron work. All cement testing has been done at the works of the American Cement Company at Egypt, Pa.

A deputy chief engineer was also appointed, performing such special duties as the Chief Engineer assigned, and acting as chief engineer whenever the latter was absent.

The personnel of this organization has been:

GEORGE S. RICE, Deputy Chief Engineer.

ALBERT CARR, Engineer 1st Division, 3.5 miles, Sections 1, 2, 3, 4.

ALFRED CRAVEN, " 2d " 3.8 " " 5-A, 5-B, 6-A, 6-B.

BEVERLY R. VALUE, " 3d " 8.0 " " 7, 8, 9-A, 9-B, 11, 13, 14.

EUGENE KLAPP, " 4th " 5.5 " " 10, 12, 15.

CALVIN W. HENDRICK, Engineer Sewer Division.

ST. JOHN CLARKE, General Inspector of Designs.

W. A. AIKEN, General Inspector of Materials.

On March 1, 1903, Mr. Value resigned his position as Division Engineer to accept a more advanced position elsewhere, when Mr. C. V. V. Powers, his senior assistant, was promoted to the vacancy. On December 21, 1904, Mr. Klapp resigned to become Consulting Engineer to the Brooklyn Rapid Transit Company, and on December 22, 1904, the Board appointed Mr. Rice Acting Chief Engineer to take the place of the Chief Engineer resigned;

Mr. Rice's appointment and Mr. Klapp's resignation both to become effective January 1, 1905.

Under the advice of the Chief Engineer the Board appointed in 1900 Messrs. Heins & La Farge, Architects, and Messrs. Duncan & Hutchinson, Consulting Electrical Engineers. The former prepared the designs for the interior treatment of stations that have won public approval, and the latter have examined and approved from time to time the power plans as prepared by the Contractor.

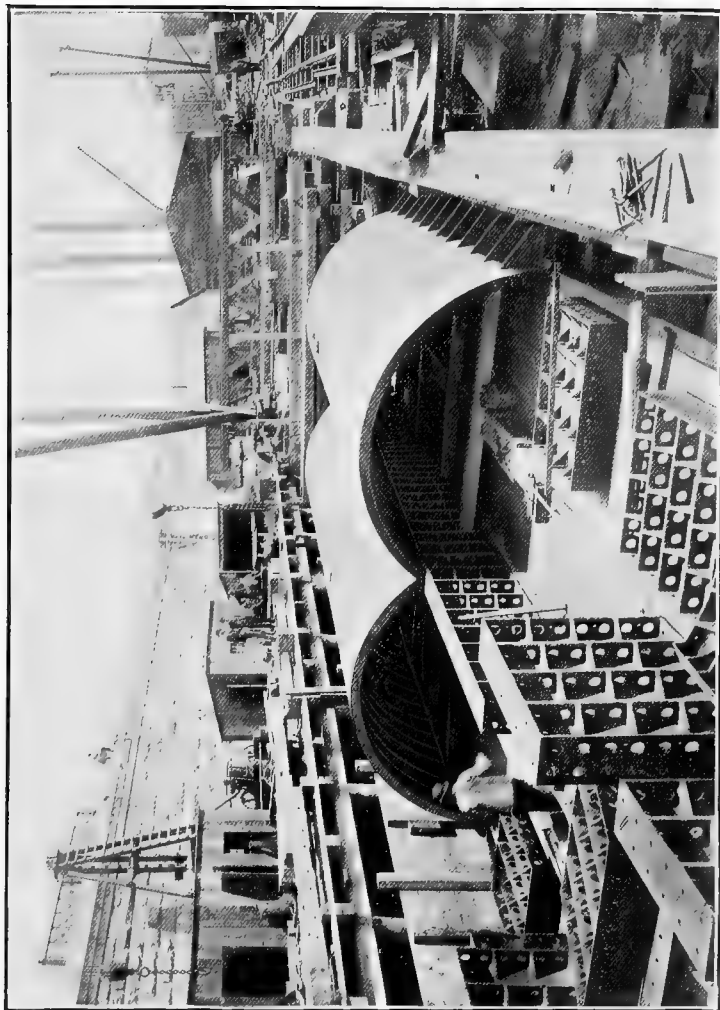
In order to supervise the sub-contracts and to develop the plans for the equipment, the Rapid Transit Subway Construction Company appointed the following staff:

Chief Engineer, Mr. S. L. F. Deyo; Principal Assistant Engineer, Gen. H. T. Douglas; Consulting Engineer, Mr. George Gibbs; Electrical Director, Mr. L. B. Stillwell; Mechanical Engineer, Mr. John Van Vleck.

The Chief Engineer of the Rapid Transit Board desires to record his obligations to these gentlemen for their hearty co-operation. To them for their watchful care in superintendence, and ingenious skill in working out the plans for the equipment, many features of which were necessarily novel and mark a decided advance in the art, much of the success attending the opening of the subway is due.

The plans on which the contract was based were adopted by the Board on February 4, 1897, and under a requirement enforced by the courts to keep the expense within the limits much less than contemplated by the Act. In the interval between the preparation of the plans and the letting of the contract, an interval made obligatory by the debt-incurring capacity of the city having been temporarily absorbed by other improvements, the demand for additional transit facilities had been clearly recognized. Shortly therefore after the closing of the contract the plans were restudied and certain additions and betterments were made. No change of any importance in construction or sewer plans has been found necessary.

In order to provide easier means of making an extension down Broadway, the double-track loop around the Post Office was



HARLEM RIVER TUNNEL. CONSTRUCTING TUBES PREPARATORY TO SINKING

replaced by a single-track loop for local trains only, between the City Hall and Post Office, while the express tracks were so arranged under Park Row as to permit trains to be reversed on a central track or run through to South Ferry or Brooklyn whenever an extension should be authorized and constructed. This change in plan involved a shortening of tracks and a reduction in expense. Another change involving a saving was made at Fort George. Since the plan had been adopted by the Board a surface railway had been built along the Kingsbridge road, so that it was no longer necessary to make a deflection by the way of Ellwood street to give facilities to Kingsbridge road. The Fort George tunnel was, therefore, extended northerly 500 feet, and the viaduct carried across Dyckman street and via Nagle avenue to Amsterdam avenue, and so to the Kingsbridge road at Two Hundred and Eighteenth street. The viaduct was thereby shortened 1,705 feet, but the tunnel was lengthened 500 feet, making a net shortening of route of 1,205 feet.

Changes involving increases were the lengthening of all platforms where express trains might stop from 200 feet to 300 feet and 350 feet, making it possible to run eight cars per express train, the adding of a third track to a great portion of both the east and west side lines; an extension from One Hundred and Forty-first street and Lenox avenue to One Hundred and Forty-eighth street, and ordering one additional station on the east side viaduct at One Hundred and Seventy-fourth street.

Changes in plans which have decreased or increased the amount of track as contemplated by the original contract are given below :

CHANGES INVOLVING DECREASES.

LOCATION	DATE ORDERED	TRACK DECREASED
City Hall Loop and Park Row Terminal.....	Sept. 20, 1900	0.07 Miles.
Fort George.....	June 21, 1900	0.46 "

Total Track Decreased, 0.53 miles.

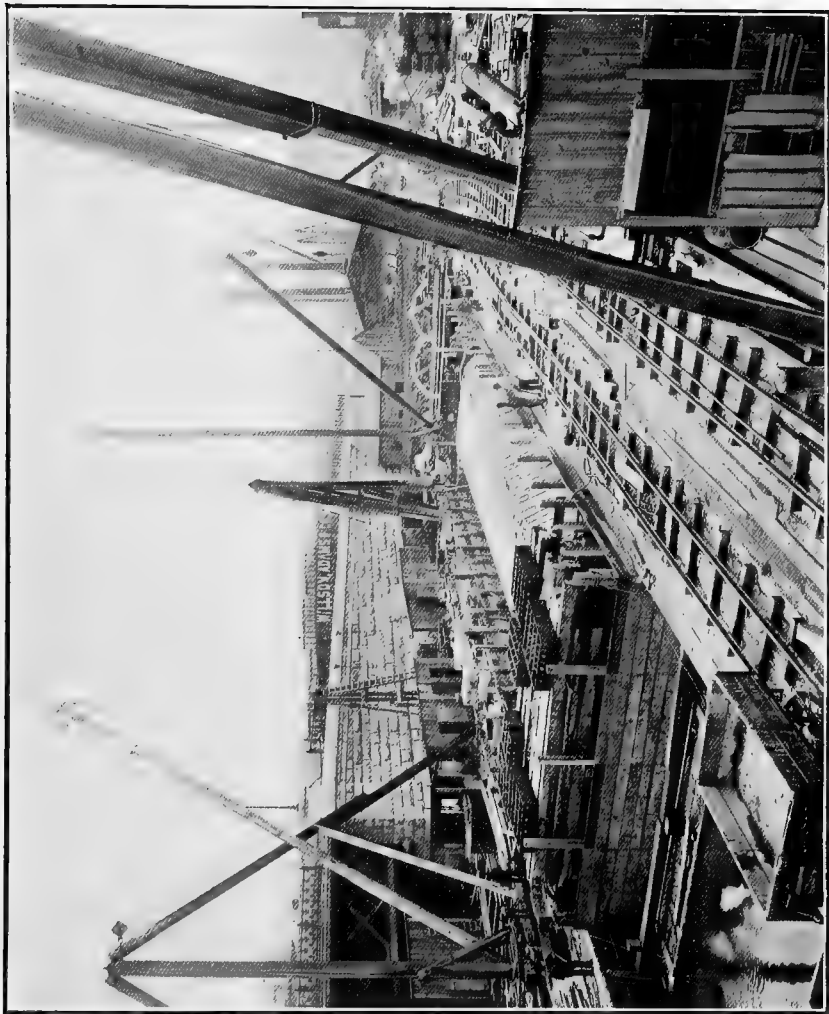
CHANGES INVOLVING INCREASES.

LOCATION	DATE ORDERED	TRACK INCREASED
Spring Street Station, Siding.....	July 12, 1900	0.10 Miles.
14th St. Station, Siding (lengthened).....	Sept. 6, 1902	0.08 "
72d Street Station, Siding (lengthened).....	Sept. 6, 1902	0.12 "
96th Street Station, Siding (lengthened).....	Sept. 6, 1902	0.19 "
Siding at Fort George.....	Jan. 15, 1903	0.04 "
Third Track, 104th St. to 137th St.....	May 2, 1901	1.66 "
Third Track, West Side Viaduct.....	Jan. 15, 1903	0.82 "
Third Track, East Side Viaduct.....	July 24, 1902	2.64 "
Manhattan Connection, Third and Westchester Avenues.....	July 16, 1903	0.51 "
Lenox Avenue Extension.....	Oct. 24, 1901	0.48 "

Total Track Increased 6.64 Miles.

The net result of all these changes has been to make the route distance 21.3 miles instead of 20.81 miles as contracted for, and the total track 68.4 miles instead of 56.3 miles. The distribution of the track as constructed or nearly completed is as follows:

NO. OF TRACKS	UNDERGROUND	VIADUCT	TOTAL
1	0.4 Miles.	.....	0.4 Miles.
2	6.6 "	1.4 Miles.	8.0 "
3	1.9 "	4.2 "	6.1 "
4	6.8 "	.....	6.8 "



HARLEM RIVER TUNNEL. TUBES COVERED WITH CONCRETE READY FOR SINKING.

The net cost of these changes has not been definitely determined, although partial payments have been allowed at the same unit rates as had been arbitrarily determined by prorating the contract price of \$35,000,000 over the estimated quantities composing the original contract.

In the report of 1903 it was shown that the main structural sub-contracts had been completed on sections 4, 5-B and 12, and all other contracts south of Section 13 were nearly finished. During the year Sections 1, 2, 3, 5-A, 6-A, 6-B, 7, 8, Lenox avenue extension, 10, 11 and 13 have been completed, while Sections 9-A and 9-B are nearly completed. On Section 14 there remain the completion of the large arches spanning the stations at One Hundred and Sixty-eighth and One Hundred and Eighty-first streets, and the lining of the tunnel arch between the station at One Hundred and Eighty-first street and a point 2,516 feet south of the portal at Fort George, a distance of 1,718 feet. On Section 15 there remain the reconstruction of the draw bridge across the Harlem river ship canal, and the erection of the viaduct from the canal to Kingsbridge.

At the beginning of the year the work was so well advanced it was hoped that operation could begin by June. During the Spring, however, extensive labor troubles arose in nearly all trades, which seriously crippled progress in the work of station finishing and the installation of signals and lights.

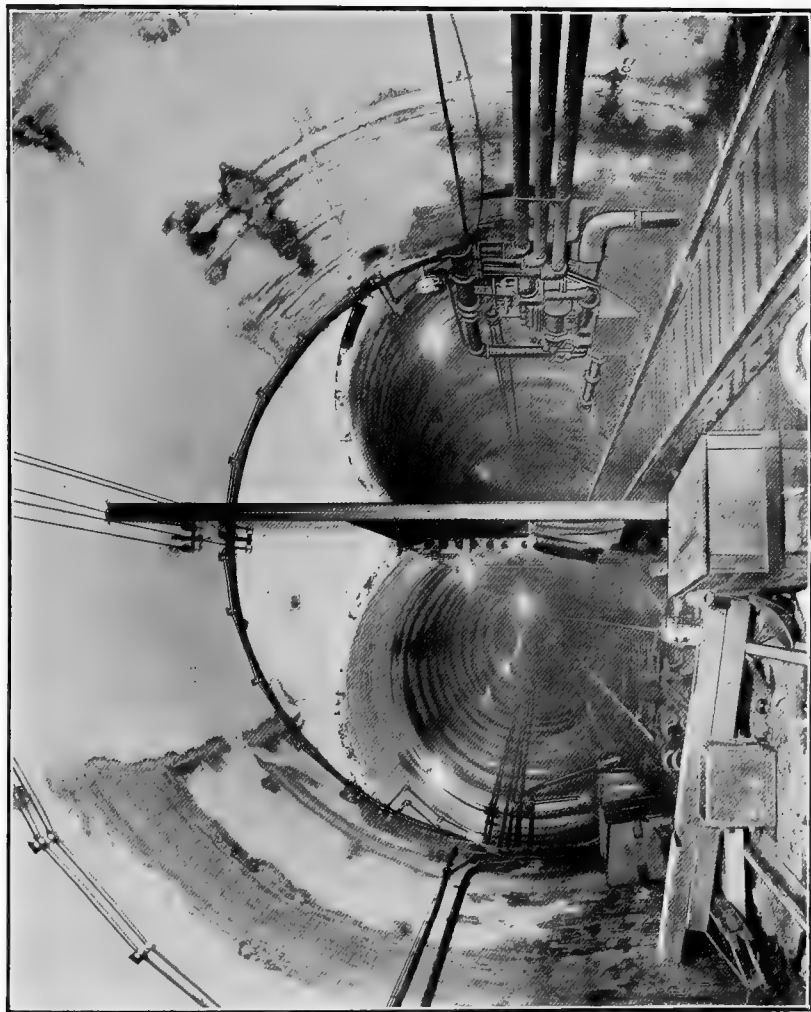
In September, it was decided to begin operating in October, the work then remaining unfinished consisting chiefly of ornamental tiling on station walls, being of such a character that its subsequent completion would neither interfere with the running of trains nor seriously inconvenience the patrons of the road. Accordingly the Chief Engineer, on October 13, certified to the Board that the railway from the City Hall to and including the station at One Hundred and Forty-fifth street on the west side was completed for operation, and under the permission of the Board the first train was started from the City Hall station at 2 p. m. on October 27, 1904, carrying the officials of the city and of the lessee company, the Interborough Rapid Transit Company, followed by other trains carrying guests. At 7 p. m. of

the same day the line was thrown open to the public for regular service. On November 23, the east side line was opened to One Hundred and Forty-fifth street and Lenox avenue; on November 5, the west side line to the station at One Hundred and Fifty-seventh street, and on November 26, the east side viaduct from a connection with the Manhattan Elevated Railway at Third avenue to the station at One Hundred and Eighty-first street. The following table repeats these dates and shows the route mileage in operation on each :

DATE	LINE OPEN	MILE-AGE	TOTAL MILEAGE
October 27 ..	West side, City Hall to 145th St.	9.2	9.2
November 23.	East side, 96th St. to 145th St.	3.0	12.2
December 5 ..	West side, 145th St. to 157th St.	0.6	12.8
November 26.	East Side, Third Ave. to 180th St.	3.1	15.9

The contract provided that the work should be completed in four and one-half years. If this is to be construed as four and one-half years from the formal beginning, March 24, 1900, the time limit expired on September 24, 1904, while the actual gross time to October 27 was four years, seven months and three days. Time lost by unavoidable strikes consumed some months, while other months were necessarily lost in perfecting an organization. An inspection of the tables on pages 232 to 235 will show that the sub-contractors did not actually begin the main work until on the average about July 15, 1900, so that the actual work without any allowance for delays by strikes was but a trifle more than four years, a result reflecting much credit on the sub-contractors. The work at Fort George and at the Harlem river was delayed by changes in plans of routes.

Tables subjoined will give the details of work performed by each sub-contractor, from the beginning of work to December 31, 1904, inclusive. In the following table the chief items are



JOINING OF ARCH AND TUBES, HARLEM RIVER TUNNEL.



HARLEM RIVER TUNNEL, DRAINAGE PUMP.

given, aggregating totals for work within the neat structural lines, denoted "regular," for which the sub-contractors were paid; items specifically ordered by the Board are called "extra," while work outside of neat lines whether regular or extra is called "excess."

ITEM	REGULAR	EXTRA	EXCESS	TOTAL
Earth Excavation...Cu. Yds.	1,924,871	150,677	148,524	2,224,072
Rock Excavation... "	819,759	89,218	57,800	966,777
Tunneling..... "	349,336	7,539	58,785	415,660
Concrete Masonry.. "	497,373	47,199	42,098	586,670
Brick Masonry.... "	26,848	1,681	7,766	36,295
Cut Stone Masonry... "	1,699	41	28,015	29,755
Steel Erected..... Tons.	58,604	10,054	19	68,677
Cast-iron Erected... "	3,117	451	39	3,607
Cement Delivered... Bbbs.	742,524	71,811	72,304	886,639
Track Laid..... Lin. Ft.	248,000	38,500	.....	286,500

The total amount of money expended, on account of both regular and extra work done under Contract No. 1 to December 31, 1904, approved on vouchers, has been as follows.

	1900	1901	1902	1903	1904	TOTAL
Regular Work	\$1,685,000	\$10,343,000	\$11,436,000	\$6,930,000	\$3,220,000	\$33,614,000
Extra Work..	.....	162,000	949,994	2,241,528	951,730	4,305,252
Total...	\$1,685,000	\$10,505,000	\$12,385,994	\$9,171,528	\$4,171,730	\$37,919,252

TOTAL AMOUNT OF CONTRACT WORK DONE BY

ITEM	Quantity	Sec. 1	Sec. 2	Sec. 3	Sec. 4	Sec. 5-A	Sec. 5-B	Sec. 6-A	Sec. 6-B	Sec. 7	Sec. 8
Earth Excavation.....	Cu. Yds.	128,416	286,830	340,654	1,137.7	157,998	100,584	149,391	167,990	8,482.63	159,409
Rock Excavation.....	"			99,611	6,288.8	121,648	87,604	145,462	136,028	3,864.23	130
Tunneling.....	"				68,909.9					74,439.17	
Shaft Excavation.....	"									309	
Portland Cement Concrete	"	20,167	45,585	62,096	1,9019	34,433	26,520.6	44,304.1	43,077	14,744.73	31,352
Natural Cement Concrete..	"						39				
Steel Erected.....	Tons.	2,470	5,274	7,539	34.61	4,537	2,869 164	5,043.898	5,397	165.4	2,707
Cast Iron Erected.....	"		195	320		101	92.491	104.685	182		148
Brick Masonry (common)...	Cu. Yds.	1,476	3,295	4,485		1,963	1,583.2	2,439.8	2,799	1,051.86	2,421
Brick Masonry (facing)...	"							36.93	45		
Brick Masonry (enameled)	"							282.84	25.5		23
Pedestal Masonry.....	"	69	466	851		414.94	409.78	701.64	433	17.44	255
Cut Stone Masonry.....	"							18.2	11		
Restoring Street Surface..	Sq. Yds.	4,305	8,736	58,407	726.1	29,772	25,636.6	28,867.4	22,832	176.96	12,538
Restoring Park Surface..	"					80		11,852.4	8,584	2,007.82	
Repaving.....	"										
Vault Lights.....	"	1,258	1,849	2,921		1,100	1,069.45	353.7	976		1,154
Steel Delivered.....	Tons.	2,481	5,278	7,563		4,530	2,871.755	5,043.898	5,579	165.4	2,821
Cast Iron Delivered.....	"		201	326		104	92.491	104.285	174		147
Expended on Stations.....	Dollars	33,079	74,347	112,476		38,004	42,025	41,439	60,459		50,963
Waterproofing.....	Sq. Yds.	31,413	101,586	143,827	1,305.5	70,181	59,084.2	103,351.8	90,951	4,742.52	67,786
Water Pipes, 48-inch.....	Lin. Ft.					3,495		441			175
Water Pipes, 36-inch.....	"		5,620	783		519	7	913	2,850		
Water Pipes, 30-inch.....	"					61	357				324
Water Pipes, 24-inch.....	"	82	339						209		270
Water Pipes, 20-inch.....	"		895	369		1,706	1,339	6,357	6,168	110	532
Water Pipes, 16-inch.....	"					12					
Water Pipes, 12-inch.....	"	189	6,386	6,682		1,140	1,261	1,417	1,293		1,286
Water Pipes, 8-inch.....	"										
Water Pipes, 6-inch.....	"	460	3,167	7,348		956	388	156	198		777
Water Pipes, 4-inch.....	"					46	206				
Water Pipes, 3-inch.....	"					110					
Water Pipes, 2-inch.....	"					170					
Gas Pipes, 36-inch.....	"							135			
Gas Pipes, 30-inch.....	"		5,663	186		254		243			856
Gas Pipes, 24-inch.....	"			244				521			
Gas Pipes, 20-inch.....	"		231	123		1,919	1,068	631		110	114
Gas Pipes, 16-inch.....	"	155	857	558		1,159	75				252
Gas Pipes, 12-inch.....	"	105	503	326		1,329	148	115			874
Gas Pipes, 10-inch.....	"		252	89		2,487	171				374
Gas Pipes, 8-inch.....	"	112	6,217	17,109		1,204	18	441			3,704
Gas Pipes, 6-inch.....	"	1,327	8,804	13,703		355	612	950			665
Gas Pipes, 4-inch.....	"		936	4,107				111			
Gas Pipes, 3-inch.....	"	46									
Drain Pipes, 15-inch.....	"				1,105	89	153	476	142	4,578	139
Drain Pipes, 12-inch.....	"				3,203	3,410	3,991	6,701	2,284		
Drain Pipes, 10-inch.....	"				3,554	1,246	1,568	3,114	4,053		203
Drain Pipes, 8-inch.....	"	66			924	3,215	1,632	2,052	4,550		170
Drain Pipes, 6-inch.....	"	247	23	3,787	1,752	232	2,016	3,861	7,047		586
Drain Pipes, 4-inch.....	"	78	789	879							
Drain Pipes, 3 1/2-inch.....	"			571							
Drain Pipes, 3-inch.....	"		131	2,933	3,294	1,550		523	94	6,659	164
Mail Tubes, 8-inch.....	"	4,154	1,977	14,461	247						
Edison Ducts.....	"	5,869	13,591	14,139							
Empire City Ducts.....	"	36,016	24,648	90,299							
Empire City Blow Pipes..	"			3,886							
Fire Alarm Ducts.....	"			550							
Telephone, Telegraph and	"										
Electric Light Ducts.....	"			21,288							
Metropolitan St. Ry. Ducts	"		2,088								
Western Union Tubes.....	"	3,900									
Track, laid (single).....	"	7,100	24,500	32,300	8,090	18,000	14,400	26,350	23,340	9,150	11,850
Average Number of Men											
Employed per Day.....	Number	142	68	10	4	280	46	145	249	30	180

7 EACH SUB-CONTRACTOR TO DECEMBER 31, 1904

Sec. 9-A	Sec. 9-A River	Sec. 9-B	Sec. 10	Sec. 11	Sec. 12	Sec. 13	Sec. 14	Sec. 15	TOTAL WORK DONE 1900	TOTAL WORK DONE 1901	TOTAL WORK DONE 1902	TOTAL WORK DONE 1903	TOTAL WORK DONE 1904	TOTAL TO DATE
70,684	61,089	108,651	9,056	62,092	3,759	98,640	3,783	6,225	135,425	839,708	691,578	245,462	12,698.33	1,924,871.33
13,625	1,872	57,533	757	87,274	149	52,885	4,738	300	18,453	287,457	393,588	117,003	2,658.03	819,759.03
		545				133,367	72,075		4,293	136,784	133,049	61,151	14,059.07	349,336.07
						5,686			5,705	290				5,995
18,909	12,910	33,420	4,206	21,255	1,354	48,859	12,724	2,438	1,619	98,762	209,730	153,477	28,785.43	497,373.43
				1,581	1,211	1,207			1,189	844	1,907	98	4,038	
1,086	12	878	11,180	1,579	2,010	1,703		4,118.7	86	9,294	18,497	18,238.864	12,487.908	58,603.772
	1,406	43	212	81	35	124		73		114	399	2,029.491	574.685	3,117.176
909		1,336		1,574	7	1,485	23		91	5,352	10,872	9,003	1,529.86	26,847.86
				142	12	89			40		129	128	29.93	324.93
										288	33	6.41	3.93	331.34
47		37	323	136	53.08	155		111	47	1,689	1,982	753.86	8.02	4,479.88
				857	247	566				90	697	749	163.2	1,699.2
6,998		9,011		733	196	18,611				8,835	49,288	89,482	79,941.06	227,546.06
				7,369	1,200					1,589	322	14,069	15,113.22	31,093.22
			1,245	5,410	22			94			507	3,327	2,937	6,771
		125		290		98					2,267	4,400.45	4,526.7	11,194.15
1,096		878	11,183	1,581	2,010	1,719		4,225	7,981	22,501	12,025	6,834.755	9,633.298	59,025.053
	1,845	45	227	81	35	128		81	34	462	735	1,605.491	754.685	3,591.176
		7,084	54,666	32,912	14,015	37,440		7,153			1,300	127,250	477,512	606,062
29,436	10,336	45,867		43,729		44,406	308		2,132	219,843	339,627	247,642	39,066.02	848,310.02
										3,489	580	42		4,111
				528		1,115			7	6,023	4,633	1,075	597	12,335
									70	287	299	25	61	742
										82	818			900
				5,865		23			7,334	10,394	3,767	1,619	260	23,364
										12				12
		230		112		243			481	3,999	9,127	4,280	2,452	20,239
			54							54				54
		3,539	339			249			70	4,356	7,120	4,299	1,732	17,577
										117	104		31	252
												110		110
												170		170
												86	11	135
										1,452	2,123	2,678	949	7,202
				282						244	803			1,047
									436	1,553	870	808	529	4,196
										135	615	806	340	1,897
						638			150	201	456	1,715	1,346	3,868
											325	619	271	1,215
										3,679	15,624	5,343	1,738	26,384
									240	4,849	11,652	8,951	4,612	30,304
									250	3,336	874	1,306	408	6,174
											46			46
		291									291			291
		33		1,276		1,604	1,663		592	1,344	3,798	3,544	1,980	11,258
				1,541		4,224				5,844	13,414	3,335	4,254	26,847
		307		1,426		4,343				5,028	8,959	5,333	1,484	20,804
		577		431		2,103				5,942	8,904	4,488	1,205	20,539
		165		99		234				2,529	7,123	5,188	1,126	15,966
										571				571
		735		1,709		16,058	4,181			3,182	11,126	13,141	10,582	38,031
										3,888	14,968	1,158	825	20,839
										7,928	15,006	6,203	4,462	33,599
										22,159	66,594	22,544	39,666	150,963
										1,086	2,045	755		3,886
										988	5,990	438		6,540
				5,990										
										4,145	10,285	6,858		21,288
											2,088			2,088
												2,500	1,400	3,900
1,950			30,050	11,250	4,670	13,160		11,840				135,000	113,000	248,000
45	65	114	175	124	32	470	171	72	2,333	6,607	7,279	5,114	2,422	

TOTAL AMOUNT OF EXTRA WORK DONE BY

ITEMS	Quantity	LENGTHENING STATION PLATFORMS,										
		Sec. 1	Sec. 2	Sec. 3	Sec. 4	Sec. 5-A	Sec. 5-B	Sec. 6-A	Sec. 6-B	Sec. 7	Sec. 8	Sec. 9-A
Earth Excavation.....	Cu. Yds.	2,042	12,020	12,350	7	5,635	2,648	7,781	11,201	320	10,107	2,2
Rock Excavation.....	"	610		3,414	144	4,762	9,221	18,123	3,243	304		3
Tunneling.....	"				1,432					334		
Portland Cement Concrete	"	245	2,115	2,788	544	1,376	532	2,057	6,779	160	2,745	6
Natural Cement Concrete..	"											
Steel Erected.....	Tons.	38	418	278	46	156	28	157	471	6	170	
Cast Iron Erected.....	"		7	24		8	13	47	70		61	
Brick Masonry (common).	Cu. Yds.	155	245	228		58	105	77	101	5	40	
Brick Masonry (facing)....	"											
Pedestal Masonry.....	"		13					15				
Cut Stone Masonry.....	"											
Restoring Street Surface..	Sq. Yds.	93				968	668	2,375	820	4		1
Repaving.....	"											
Vault Lights.....	"								444		336	
Steel Delivered.....	Tons.	13	418	278	52	163	30	157	491	6	170	
Cast Iron Delivered.....	"			7	3	13	27	46	50		61	
Waterproofing.....	Sq. Yds.	441	2,321	3,940		2,077	1,715	4,835	8,816	296	3,225	9
Water Pipes, 36-inch.....	Lin.Ft.		93					755				
Water Pipes, 20-inch.....	"						75	55				
Water Pipes, 12-inch.....	"						170					
Water Pipes, 8-inch.....	"											
Water Pipes, 6-inch.....	"						70					
Gas Pipes, 30-inch.....	"											
Gas Pipes, 24-inch.....	"											
Gas Pipes, 20-inch.....	"						363					
Gas Pipes, 12-inch.....	"						143					
Gas Pipes, 6-inch.....	"						778					
Drain Pipes, 6-inch.....	"											
Drain Pipes, 4-inch.....	"				30		139					
Drain Pipes, 3-inch.....	"											
Track, laid (single).....	"		620	400				750	1,660			
Ducts, laid (single).....	"	163,139	735,705	976,386	122,057	527,096	451,504	787,365	707,996	249,611	420,639	137,5
Expended on Station.....	Dollars											

EACH SUB-CONTRACTOR TO DECEMBER 31, 1904.

THIRD TRACK, DUCTS, ETC.										TOTAL EXTRA WORK	TOTAL EXTRA WORK	TOTAL EXTRA WORK	TOTAL EXTRA WORK	TOTAL TO DATE
	Sec. 9-A River	Sec. 9-B	Sec. 10	Sec. 11	Sec. 12	Sec. 13	Sec. 14	Sec. 15	LENOX AVE. EXTEN- SION	1901	1902	1903	1904	
36		3,833	996	28,153	69	10,469	34	.....	40,726	12,743	40,897	95,368	1,669	150,677
40		6,458	445	37,694	7	2,627	103	.....	1,723	9,446	38,865	38,107	2,800	89,218
.....						4,002	1,771	.....	.....	.....	2,133	1,998	3,408	7,539
38		2,320	505	8,473	59	1,854	.....	.....	13,959	771	7,186	30,142	9,100	47,199
.....				627	61	491	.....	.....	.....	491	619	69	.....	1,179
41	27	91	4,286	1,281	561	223	.....	1,055	709	19	1,372	4,362	4,289	10,042
16		25	12	48	.....	57	.....	.....	71	.....	69	285	105	459
7		14	.....	207	4	428	.....	.....	7	5	100	1,030	546	1,681
.....				2	8	55	.....	.....	.....	.....	6	5	54	65
.....			6	87	.....	23	.....	.....	.....	17	75	27	25	144
.....			9	22	10	.....	.....	.....	.....	1	5	34	1	41
56						1,169	.....	.....	2,946	.....	313	3,301	5,585	9,199
.....			143	4,744	.....	.....	.....	.....	.....	.....	.....	2,562	2,325	4,887
65				223	.....	.....	.....	.....	488	.....	107	352	1,097	1,556
41	27	93	4,286	1,279	561	225	.....	1,055	659	671	996	5,030	3,307	10,004
16		25	12	48	.....	57	.....	.....	71	.....	129	257	50	436
09		2,137	.....	16,643	.....	3,908	.....	.....	17,634	2,563	14,562	41,296	10,476	68,897
.....											635	213	.....	848
.....													130	130
.....									583	.....	.....	.....	753	753
.....				13	.....	.....	.....	.....	.....	.....	13	.....	.....	13
.....									180	.....	.....	.....	250	250
.....									454	.....	.....	.....	454	454
.....				13	.....	.....	.....	.....	36	.....	13	.....	36	49
.....									63	.....	.....	.....	426	426
.....													143	143
.....									588	.....	.....	.....	1,366	1,366
.....				35	.....	200	.....	.....	.....	24	11	.....	200	235
.....				67	.....	.....	.....	.....	.....	.....	67	.....	175	242
.....				641	.....	270	.....	.....	.....	130	511	.....	270	911
.....			16,900	7,050	2,450	920	.....	4,500	3,250	.....	.....	12,000	26,500	38,500
06	21,484	117,708	234,965	276,045	68,387	417,902	141,382	.....	34,982	1,320,500	2,558,694	2,314,391	398,275	6,591,860
.....									9,760	.....	.....	500	9,260	9,760

TOTAL AMOUNT OF EXCESS WORK DONE BY EACH

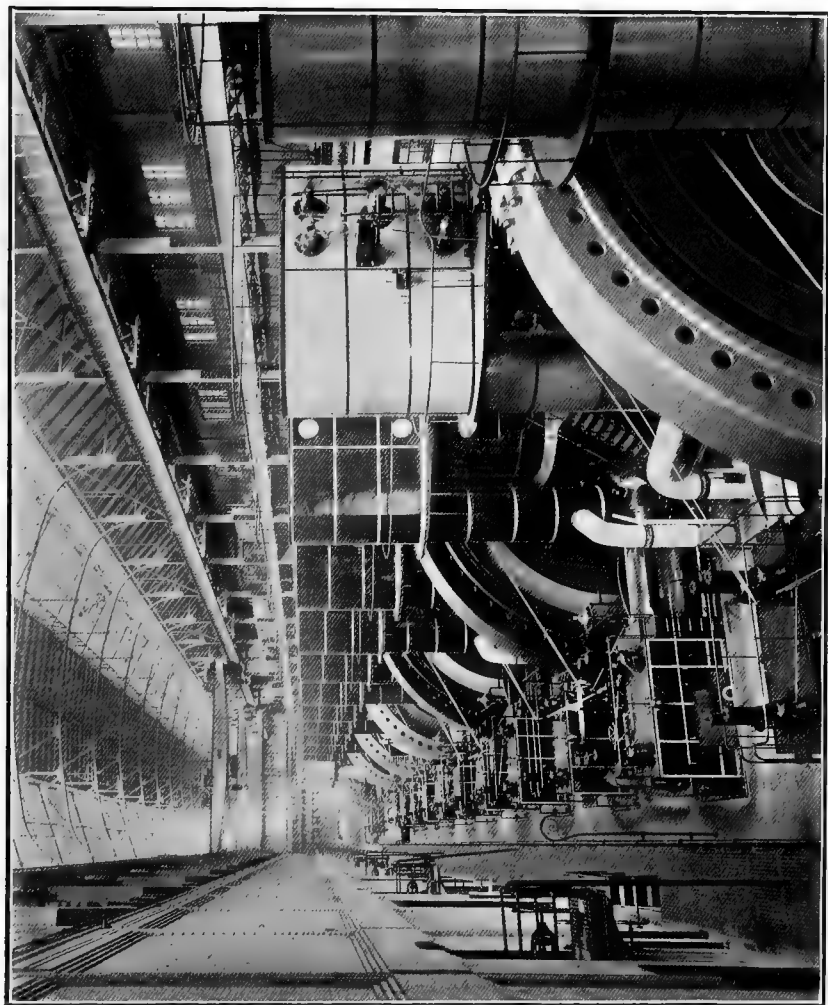
ITEM	Quantity	Sec. 1	Sec. 2	Sec. 3	Sec. 4	Sec. 5-A	Sec. 5-B	Sec. 6-A	Sec. 6-B
Earth Excavation	Cu. Yds.	6,900	17,550	10,357	1,740	4,998	2,451	10,812	16,018
Rock Excavation	"			3,958	1,052	3,874	3,681	7,302	13,389
Concrete Masonry	"	708	1,250	2,918	447		~~126~~	334	132
Other Masonry	"	1,635	2,488	10,931	1,128	2,280	4,104	5,803	4,999
Tunneling	"				12,272				
Shaft Excavation	"								

I SUB-CONTRACTOR TO DECEMBER 31, 1904

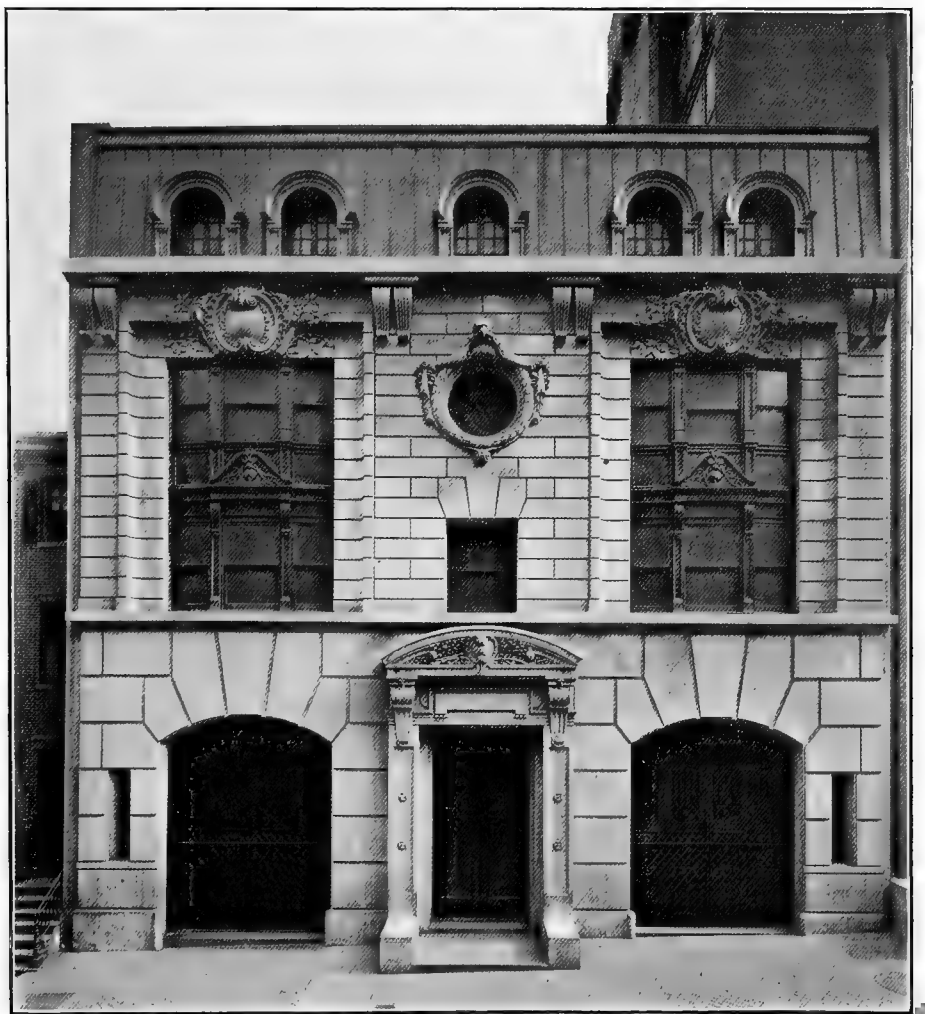
ec. 7	Sec. 8	Sec. 9-A	Sec. 9-A River	Sec. 9-B	Sec. 10	Sec. 11	Sec. 12	Sec. 13	Sec. 14	Sec. 15	LENOX AVE. EXTEN- SION	TOTAL TO DATE
521	4,709	3,938	30,882	12,174	864	5,147	1,071	14,826	.....	139	3,427	148,524
610	...	1,244	42	7,720	289	9,128	11	5,425	.....	75	.....	57,800
3,719	3,082	1,873	278	4,056	239	4,845	22	9,672	2,000	48	1,349	42,098
.....	.....	.....	.....	.....	.....	2,382	.....	1	.....	.....	.....	35,751
5,663	.....	.....	.....	.....	.....	.....	.....	.....	9,050	.....	.....	36,985
295	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	295



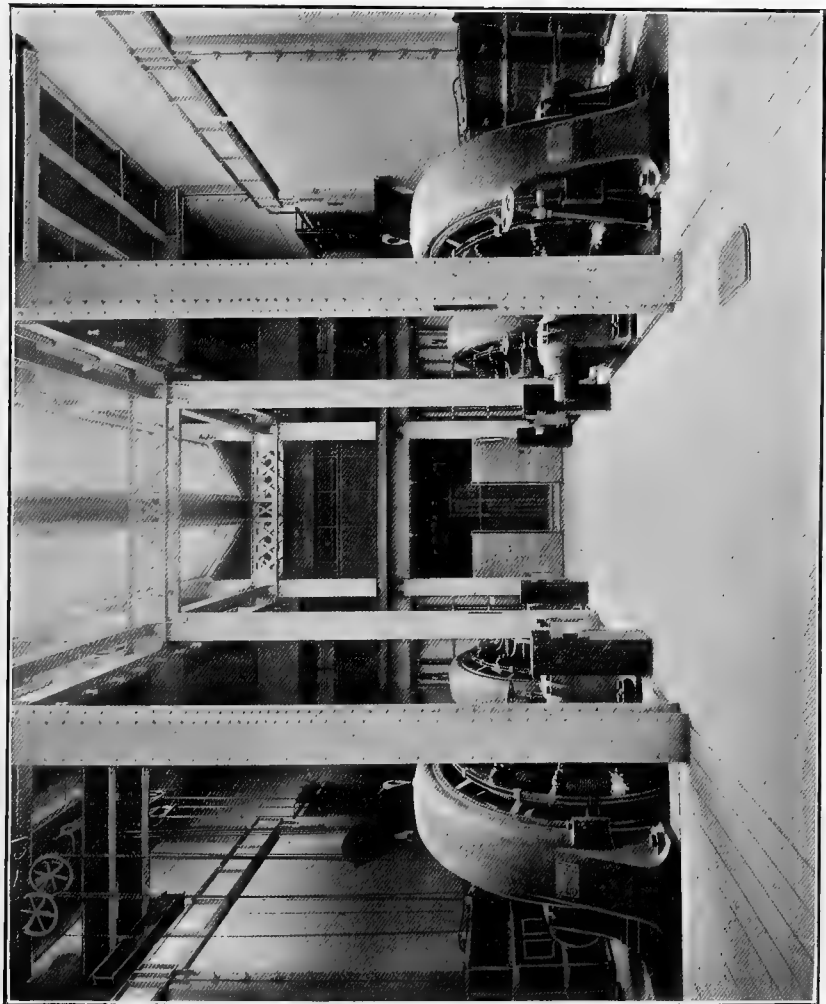
Power House, Exterior.



POWER HOUSE, INTERIOR



EXTERIOR OF SUB-STATION.



INTERIOR OF SUB-STATION.

As required by the contract the contractor furnishes all equipment. In the report for 1902 there was given a general description of the power house and the machinery to be contained therein. On October 27 when operation began there were installed, ready to furnish current, four main generating units of a nominal capacity of 5,000 k. w. each, twenty-four boilers, and the necessary piping, switch board, and electrical connections. At the end of the year there were finished for operation six main units, three lighting units, and forty-two boilers, while the work of setting up was in progress on two main units and twelve boilers.

The power house itself was finished to full width for a length of 546 feet, and the work begun to complete it to the fully contemplated length of 694 feet. At present the west end of the first part is closed by a temporary bulkhead. The west wall is now nearly completed.

The power layout called for eight sub-stations to be located as follows:

SUB-STATION	LOCATION	INTERVENING DISTANCE	CONVERTER UNITS	
			Installed	Provision for
11	City Hall Place	.....	6	7
12	East 19th Street	1.89 Miles bet. Nos. 11 and 12	6	7
13	West 53d Street	2.19 Miles bet. Nos. 12 and 13	7	9
14	West 96th Street	2.30 Miles bet. Nos. 13 and 14	7	7
15	West 143d Street	2.37 Miles bet. Nos. 14 and 15	4	7
16	West 132d Street	2.34 Miles bet. Nos. 14 and 16	4	7
17	Hillside Ave. near 11th Ave.	2.73 Miles bet. Nos. 15 and 17	3	7
18	Simpson St. near Westchester Ave.	3.06 Miles bet. Nos. 16 and 18	3	7

At the end of the year all these sub-stations were finished and in operation except No. 17.

Of high tension three-phase cables with a copper section of No. 000 B. & S. there has been drawn into the ducts alongside of the subway and in the street, 163 miles; of low tension cables with a copper section of 2,000,000 c. m. each 97 miles, and of lighting cables both in ducts and strung in the subway, 93 miles. The pressure on the high tension cables from the power house to the sub-station is 11,000 volts, and on the low tension cables from sub-station to line 625 volts.

The cars with their details of design have given the Company much concern. After considering various types it was decided by the engineers of the Company to adhere to the general type of car with end platforms in use on American railways. On the Manhattan Elevated the standard car has a length of 47 feet 1 inch over all, a length of 38 feet 8 inches in the clear inside, a width of 8 feet $9\frac{1}{8}$ inches over all, and a width of 7 feet $10\frac{3}{4}$ inches in the clear inside. The seating capacity is 48. The size of the Manhattan car was largely determined by the radius of the minimum curve of 90 feet. In the subway the limiting curve has a radius of 147 feet, so that a somewhat larger car is possible. It was finally decided to adopt as a standard a car 51 feet 2 inches long over all, 40 feet in the clear inside, 9 feet $\frac{1}{2}$ inch wide over all and 7 feet 10 inches wide in the clear inside, with a seating capacity of 52.

In order to eliminate or reduce to the minimum all danger from fire, the result of which filling the subway with smoke would be disastrous, it was realized that the new cars should be made as nearly fireproof as possible. An all-metal car of reasonable weight was unknown and at first did not seem practicable. A composite car was therefore designed having the sills of 6-inch steel channels for side sills, and 5-inch I-beams for center sills, and the superstructure of wood, but covered on the sides with copper so as to protect for a while at least the wood from taking fire by radiant heat. Great care was taken with the wiring details. All junctions and fusible plugs were located in asbestos-lined



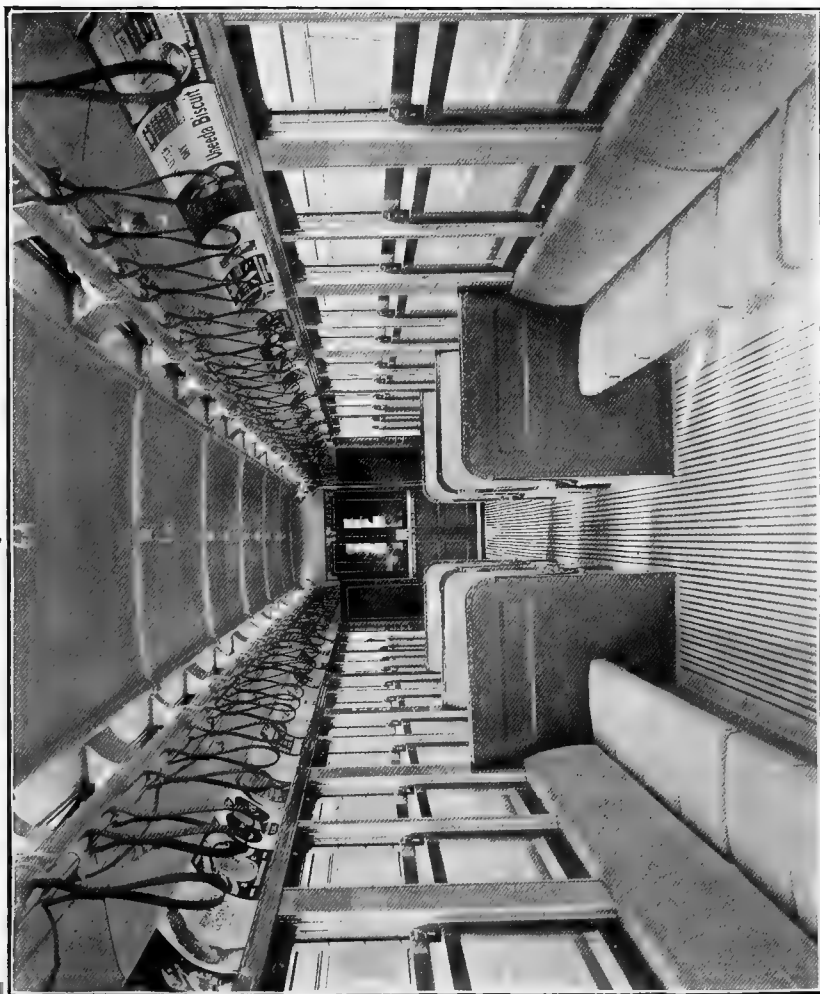
EXTERIOR VIEW OF COMPOSITE CAR.



INTERIOR VIEW OF COMPOSITE CAR.



EXTERIOR VIEW OF STEEL CAR.



INTERIOR VIEW OF STEEL CAR

boxes, while the underside of the floor was covered with "Transiter," a heavy asbestos board specially made for the purpose, both fire and electric proof. Such a car, while not absolutely fireproof, is at least slow burning and believed to be fireproof against any accident likely to occur in the subway. All details of construction were made more strong and heavy than is usual in cars for similar service, so that the weight of the car body is 27,650 pounds, as against 20,500 pounds for the car bodies on the Manhattan Elevated.

While such cars as above described were being built, Mr. George Gibbs, Consulting Engineer to the Company, and who was specially charged with equipment design, was studying a type of all-metal car, and finally evolved such a car of the same general dimensions as the composite car, the weight of the body being 28,500 pounds. In general, the details of this car are center sills of I-beams, 6 inches, 17.25 pounds; side sills, of angles 5 by 3 by $\frac{1}{2}$ inches, 12.8 pounds, with a steel plate for the sides, which, with the side sills and a longitudinal angle (spiralled bulb angle) $4\frac{1}{2}$ by $2\frac{3}{4}$ inches, at the level of the window ledge, forms a plate girder to take the place of the ordinary iron body truss. The upper side and roof framing is of steel, while the interior lining of the car is aluminum. The floor is a cement compound. The only wood used is in the window sashes, doors and in the post furring, which is fire-proofed.

On October 27 there were delivered on the line 103 metal cars and 502 composite cars. At the end of the year 97 metal cars in addition had been furnished, and there were outstanding contracts for 100 metal cars. It is the intention to make the metal cars the motor cars, and the composite cars the trailers, until such time as the latter will be entirely superseded by the former.

As equipped electrically the motor cars have each two motors of a nominal capacity of 200 h. p. each, working on two axles of one truck. The total weight, on track, of a metal motor car completely equipped, but exclusive of passengers, is 76,925 pounds, and a composite trailer with ordinary trucks, 51,300 pounds. The ordinary make-up of a local train is five cars, of which three are

motors and two are trailers, while an express train consists of eight cars, five motors and three trailers. The former therefore weighs empty 333,384 pounds, and has a total energy of 1200 h. p., while the latter weighs 538,540 pounds, with an energy of 2,000 h. p. In both cases the energy figures are a nominal rating and are capable of standing considerable overload, especially during the period of acceleration.

The cars themselves represent, therefore, a very decided advance in the art of car design, and appear to reduce fire risk to the minimum. As additional safe guards the third rail is covered with a stout plank on insulated brackets, and the current feeders are so arranged that from convenient points between stations, at places distinctly marked, the current on all lines can be instantly cut off, and an alarm given to the next station and in the power house. In addition on all station platforms are located switches, by which, in case of trouble, the station attendant can set at danger all signals on all entering tracks, and then release afterwards such signals as may be desired.

For the regular train signals, automatic devices were adopted. The express lines were divided into blocks, the length of each being the distance in which a train traveling at full speed could be brought to rest with current cut off and emergency brakes applied. As this distance is obviously dependent upon the profile of the road, and as to whether the gradient is ascending or descending, the blocks are of varying length, from 450 feet to 1,000 feet. The ordinary arrangement of home and distant signals is established, but always with an overlap block, that is, each home signal guards not the next block, but the one after, so that there is always at least one whole block distance intervening between the home signal and the next train ahead.

At each signal box and connected with the home signal there is a mechanical trip set in the center of the track. When the home signal is at danger the trip is erect, so that if a motorman for any cause overruns a home signal at danger the trip will cut off his power, set his brakes and automatically bring the train to a stop before passing off the next block.



SIGNAL AND TRIP AT BROADWAY AND ONE HUNDRED AND TENTH STREET; THREE TRACKS.



SUBWAY AT SPRING STREET STATION; FIVE TRACKS.

On the local tracks home danger signals are located to guard all station approaches, curves and any other point obstructing a free view of trains ahead.

The traffic results seem to indicate that the public have adopted with approval the new means of transportation. As was expected, on the first few days after its opening the line was much crowded with curiosity travel, the five days in October showing a total travel of 1,294,000, or a daily average of 258,800. From this the traffic fell off to a minimum for a week day of 172,288 on November 10, which marked what may be called the basis of initial travel. From this minimum there was a steady and substantially even increase as the public gradually became acquainted with the road, so that the total travel for November was 6,150,917, a daily average, including Sundays, of 205,030. During December the growth continued, reaching a maximum for the last day in the year, when there were carried 358,566 passengers, with the total for the month of a daily average of 283,773. No railway has ever shown such a traffic at the end of two months after its opening. A study of the travel indicates that the popular feature is the combined express and local service. The other transportation lines in the borough of Manhattan, while losing somewhat as the result of the opening of a new line, have not lost anything like the total travel shown by the subway. It is therefore evident that the new facilities have created new travel, and that such creation is largely due to the express service, by which people can make journeys not hitherto possible. The local trains are used principally as collecting trains for the expresses, the majority of the local train passengers alighting at each express station, while their places are taken by others coming from the express trains to be deposited at the local stations before the next express stop.

As to traffic per station, the Brooklyn Bridge does naturally the largest business. This is due to travel to and from Brooklyn via the Bridge, and also to the fact that pending the completion of the extension down Broadway, passengers from the lower district are compelled to use the Brooklyn Bridge station. When the extension is completed much of the traffic now going to the Brooklyn bridge station will be diverted to the stations at Fulton street,

Wall street, Bowling Green or South Ferry, while probably some of the Brooklyn travel will go direct by the subway to Brooklyn beneath the East river instead of by the Bridge. Such diversion will relieve the pressure at the Bridge station. During the two months and five days that the road was running during 1904, 16,241,869 passengers were carried, which were taken up at the several stations as follows :

Number of Passengers carried from each station of the Subway, from Opening Day, October 27, to December 31, 1904, inclusive.

STATION	DATE OF OPENING	PASSENGERS CARRIED		
		October 27 to 31, inclusive	Month of November	Month of December
City Hall.....	October 27	88,660	216,860	181,830
Brooklyn Bridge.....	"	246,854	1,296,946	1,548,881
Worth Street.....	"	13,370	67,972	100,501
Canal Street.....	"	25,525	101,314	149,509
Spring Street.....	"	24,960	109,983	171,277
Bleecker Street.....	"	29,357	119,210	180,620
Astor Place.....	"	41,475	192,202	307,562
14th Street.....	"	85,090	419,760	549,650
18th Street.....	"	25,050	140,823	219,907
23d Street.....	"	59,850	276,895	379,625
28th Street.....	"	26,834	134,118	191,013
33d Street.....	"	25,701	129,489	174,590
Grand Central.....	"	82,430	488,095	607,125
Times Square.....	"	71,603	345,577	451,720
50th Street.....	"	24,230	118,510	165,840
Columbus Circle.....	"	41,730	176,790	231,820
66th Street.....	"	20,215	108,345	149,180
72d Street.....	"	29,400	167,560	209,940
79th Street.....	"	18,349	101,223	137,604
86th Street.....	"	22,732	119,535	160,473
91st Street.....	"	11,906	62,747	86,560
96th Street.....	"	33,862	181,598	219,145
103d Street.....	"	31,770	172,471	197,279
110th St. and Broadway....	"	20,390	81,481	84,133
116th St. and Broadway....	"	19,510	75,770	70,730
Manhattan Street.....	"	33,134	111,307	81,359
137th Street.....	"	49,493	75,105	44,480
145th Street.....	"	88,728	209,283	138,780
157th Street.....	October 28	1,792	25,414	76,404
110th St. and Lenox Ave..	November 23	.....	45,078	228,952
116th St. and Lenox Ave..	"	.....	75,594	345,408
125th St. and Lenox Ave..	"	.....	70,535	303,051
135th St. & Lenox Ave..	"	.....	55,462	241,973
145th St. and Lenox Ave..	"	.....	21,510	52,520
Jackson Avenue.....	November 26	.....	15,420	101,949
Prospect Avenue.....	"	.....	14,504	93,852
Simpson Street.....	"	.....	5,253	32,003
Freeman Street.....	"	.....	8,673	60,513
174th Street.....	"	.....	2,008	11,594
177th Street.....	"	.....	5,209	30,135
180th Street.....	"	.....	5,288	27,465
Totals.....		1,294,000	6,150,917	8,796,952

Grand Total from October 27 to December 31, inclusive, 16,241,869.

In the last report a description was given of the stations, their types, details of construction and decoration. At that time no one station was completed. With this report are reproductions of photographs showing different views and details of completed stations. The interest shown by the public in the interior treatment of the stations is a proper tribute to Messrs. Heins & La Farge, the Consulting Architects, who from the beginning have given unremitting attention to the details. It is also proper to mention the work done by Assistant Engineers Sverre Dahm and Ralph Cranmer in working out the engineering details of construction. It has been found in practice that during the day time the vault lights in the sidewalks give sufficient day light for station illumination without the aid of artificial light. This is an attractive feature for the patrons of the road.

Immediately after the opening of the line, and before results had been proved by practice, a question was raised as to the sufficiency of ventilation. The Board of Health at once retained Dr. C. F. Chandler, Professor of Chemistry at Columbia University and formerly President of the Board of Health. Dr. Chandler made an exhaustive examination and reported to the Board of Health. His reports follow:

Columbia University, Department of Chemistry,
November 16, 1904.

DR. THOMAS DARLINGTON, President of the Department of
Health, New York, N. Y.

My dear Sir:—In response to your request I have made a careful investigation of the subway with a view to ascertaining whether it is in any sense in a condition dangerous to life or detrimental to health, and having already secured valuable information, and knowing the great interest the subject has for the citizens of New York, I present herewith a preliminary report:

I have been assisted in this work by Professor Charles E. Pellew and Dr. Floyd J. Metzger, both of Columbia University.

I have been using the subway ever since it was thrown open to the public, and have paid special attention whenever I have been in



SPRING STREET STATION.



BLEECKER STREET STATION.

it to all the conditions which can be observed. I have noticed the system of construction, the nature, size and number of the entrance and exit openings and the ventilating openings, the condition of the atmosphere, both as to its effect upon my senses and in relation to its motion in the subway.

CHEMICAL COMPOSITION OF SUBWAY AIR.

As the subject which seems to be attracting most attention is the chemical composition of the air in the subway, I directed my first efforts towards ascertaining the chemical composition of this air, with special regard to the percentage of oxygen which it contains, it having been alleged that the air of the subway had in some manner lost a very large proportion of its oxygen, and had consequently become unfit for human beings.

According to the best authorities, as, for example, Dr. John S. Billings in his work "Ventilating and Heating," the chemical composition of the atmosphere when uncontaminated is as follows:

Oxygen	20.80
Nitrogen	70.20
Carbon dioxide	0.03 or 0.04

The composition is not absolutely constant, the oxygen being sometimes a little higher and sometimes a little lower than the percentage given above.

Thus far fifty samples of subway air have been carefully analyzed and the percentage of oxygen determined, the result being a maximum of 20.80 and a minimum of 20.30—average 20.55. At the same time nine samples of surface air were examined, showing a maximum of 20.90 and a minimum of 20.60—average, 20.76. These samples were collected at the various stations from the City Hall, to One Hundred and Sixteenth Street, at the extreme ends of the platforms and most remote from the exits or entrances. They were taken at various hours of the day, from 8.55 a. m. to 11.30 p. m.

From these results it is evident that the air in the subway has not in any case suffered any serious loss of oxygen, and is for all practical purposes quite equal to the air of the street, as far as healthfulness is concerned as dependent upon the percentage of oxygen.

GENERAL CONSIDERATIONS.

The above result, showing that the air of the subway has not suffered any deterioration of any consequence, is not at all sur-

prising when we consider the construction of the subway itself. It is practically an air and water-tight tube, of which all the openings connect directly with the atmosphere above.

The floor, sides and roof of the subway are constructed of concrete, made absolutely air and water tight by the use of tarred felt and coal-tar pitch; consequently it is impossible for the air of the subway to be contaminated by ground air, by sewer air, or by leaks in the gas mains. The only air which can enter the subway is that which comes from above the streets of New York. This is the same air which enters our houses by the windows and by the fresh-air inlets of our hot-air furnaces. It is the same air which enters shops, offices, churches and theatres. Sometimes it is perfectly clear and dry; sometimes it is moist; sometimes it carries dust, but it is always the same air. The only question, therefore, for consideration, is whether the number of persons carried in the subway is so great in proportion to its cubical air space that the air itself will be seriously injured by the abstraction of oxygen and the formation of carbon dioxide, etc., by the passengers themselves.

Comparisons cannot be made between this subway and subways which have been constructed in times gone by in other parts of the world, because of differences in the mode of construction and in the character of the motive power employed in drawing the trains. There is no combustion of coal or illuminating gas, etc., in the subway, except the little combustion which takes place in the lanterns which are employed for signalling purposes, which, of course, is absolutely insignificant and of no account.

The subway contains 35,000,000 cubic feet of air space. If 35,000 persons should be in the subway at one time there would be an allowance of 1,000 cubic feet of air space for each individual; and, assuming that each person remained twenty minutes in the subway, and that passengers were carried for twelve hours, from 7 a. m. to 7 p. m., with this number constantly in the subway, the total number of passengers that could be carried in a single day of twelve hours, each one having 1,000 feet of air space, would be 1,260,000.

OPENINGS.

Between the City Hall and One Hundred and Fifty-seventh St. there are 119 openings into the subway from the air above for the entrance and exit of passengers.

Between Sixtieth St. and One Hundred and Sixteenth St. there are twenty-five ventilating openings, each 7 feet wide and 14 feet



FOURTEENTH STREET EXPRESS STATION, TICKET BOOTH.

EIGHTEENTH STREET STATION.



6 inches long, making 144 openings in all, or sixteen openings for each mile of the subway, an average of nearly one opening for every block. In and out of these openings the air moves freely, with greater or less velocity, according to the strength and direction of the wind, and according to the difference in the temperature within and without the subway. Whenever I have ridden in the subway I have found the movement of air from outside very decided, showing that the air is entering and leaving the subway freely.

CARBON DIOXIDE.

I have not yet made any analyses with a view to determine the percentage of carbon dioxide in the air in the subway. This I shall, however, undertake next. As a matter of fact, the amount of oxygen present is a sufficient indication of the absence of any appreciable quantity of carbon dioxide. When human beings take the air into their lungs they absorb from it a certain amount of oxygen, and they add to it a somewhat smaller quantity of carbon dioxide. The high percentage of oxygen in the atmosphere of the subway, as determined by my analyses, shows that there cannot be any serious increase in the amount of carbon dioxide, as it must in every case be less in amount than the diminution in oxygen.

ORGANIC MATTERS.

It has been suggested that the air of the subway may be poisoned by peculiar poisonous organic substances, which some investigators think they have discovered in human breath. On this point it is simply necessary to state that the most recent and reliable investigations into the composition of air from the lungs have failed to discover any poisonous organic matter therein.

BACTERIA.

It has further been suggested that the subway will sooner or later become charged with dangerous bacteria. On this point I will say that the only bacteria that can find their way into the subway are the bacteria which find their way into the atmosphere above ground and into the atmosphere of our houses. We take them into our lungs and mouths every time we draw breath, but fortunately they are in most cases absolutely harmless; in fact,

they may be considered to be the normal constituents of the atmosphere.

It is true there are certain pathogenic bacteria which produce diseases, but they are no more likely to be found in the subway than in the streets, and, for that matter, in the dwelling houses; nor can it be said for any reason that the subway air will be a breeding place for bacteria, as bacteria cannot multiply in the absence of water, and the subway is and probably will continue to be substantially dry.

CONCLUSIONS.

The results of the studies and analyses which I have thus far made satisfy me that the air of the subway is entirely satisfactory, and that there is no cause for complaint as to its present condition or alarm for its future condition.

I shall continue my investigations with careful determinations of the amount of carbonic acid gas in the atmosphere of the subway, and also with regard to the extent to which the air is renewed by the entrance of fresh air into the various openings.

Very respectfully yours,

CHARLES F. CHANDLER.

Columbia University, Department of Chemistry,

November 23, 1904.

Dr. Thomas Darlington, President of the Department of Health,
New York, N. Y.

My dear Sir:—In continuation of the investigations which I have undertaken with a view to ascertaining whether the air of the subway is in a condition dangerous to life or detrimental to health, I would report that I have made a number of analyses of the air with a view to determining the amount of carbon dioxide, commonly called carbonic acid gas, contained therein.

The quantity of carbonic acid gas in the atmosphere under normal conditions averages from 0.03 to 0.04 in 100 of air; that is to say, from 0.03 to 0.04 of 1%. For convenience of expression, it is common to show the carbon dioxide in parts per 10,000, as that brings the numbers up into units. For example, we would say from 3. to 4. parts in 10,000. The following analysis from Dr. Billings' work "Ventilation and Heating" illustrates this:



GRAND CENTRAL EXPRESS STATION.

	Per cent.	Parts in 10,000
Oxygen.....	20.80	2080.
Nitrogen.....	79.20.	7920.
Carbon Dioxide.....	0.03 or 0.04	3. or 4.

The following are the results of the analyses, expressed in parts per 10,000:

CARBON DIOXIDE IN SUBWAY AIR.

LOCATION	NOV. 18, BRIGHT SUNSHINY DAY. AIR COLD AND FRESH.		NOV. 22, HAZY MORNING. AIR COLD AND FRESH.	
	HOURL	PARTS CARBON DIOXIDE IN 10,000	HOURL	PARTS CARBON DIOXIDE IN 10,000
City Hall—surface air above street	11:23 A.M.	4.74	8:18 A.M.	4.73
City Hall—south end of platform..	11:34 "	6.45	8:25 "	6.58
Canal St.—north " "	11:45 "	5.65	8:43 "	6.63
Bleecker St.—north " "	" "	" "	8:48 "	6.23
14th St.—north " "	12:04 P.M.	5.90	8:55 "	6.60
23d St.—north " "	12:25 "	5.20	9:02 "	5.32
Grand Central—west " "	12:37 "	6.74	9:14 "	6.84
59th St.—south " "	1:07 "	5.20	9:28 "	5.11
72d St.—north " "	1:20 "	4.84	9:32 "	4.66
91st St.—north " "	1:30 "	6.29	9:42 "	4.44
103d St.—north " "	1:43 "	5.04	9:49 "	4.10
116th St.—surface air above street	2:04 "	3.97	10:15 "	3.75

AVERAGES

Surface Air 4 Samples

Maximum.....4.74 parts carbon dioxide in 10,000.

Minimum.....3.75 " " "

Average.....4.30

Subway Air 19 Samples

Maximum.....6.84 parts carbon dioxide in 10,000.

Minimum.....4.10 " " "

Average.....5.67

CONCLUSION.

These results fully confirm my previous analyses of the air in the subway, and it thus appears, first, that the air of the subway is not deficient in oxygen, and, second, that the air of the subway is not contaminated with carbon dioxide.

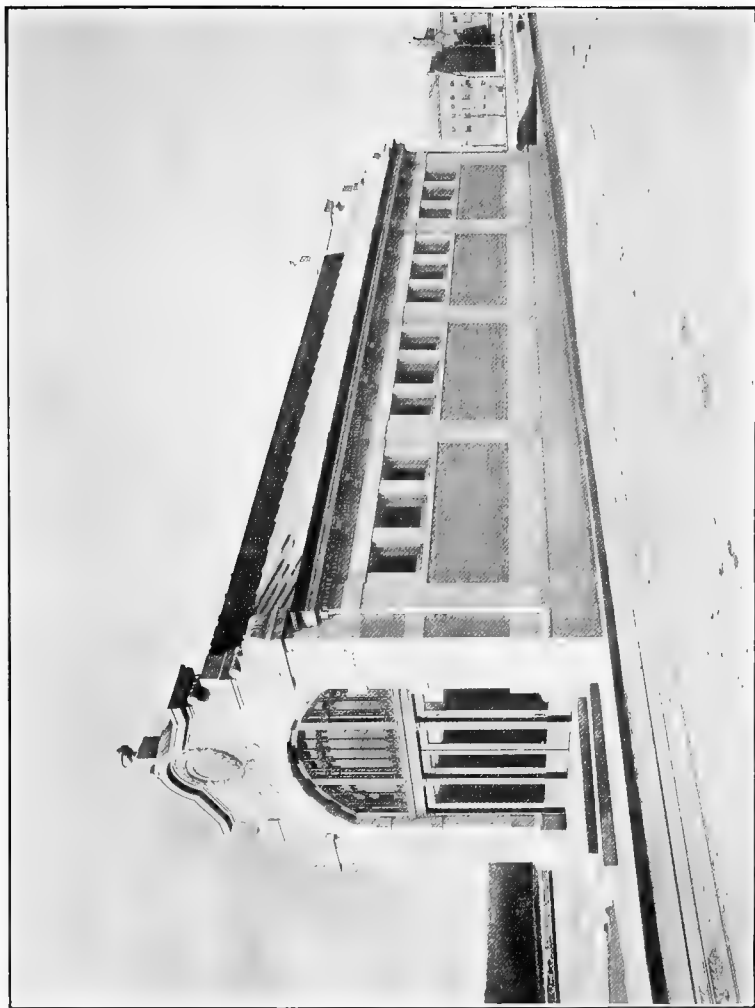
The analyses show that the average increase in carbon dioxide in the air of the subway is 1.37 parts in 10,000, which we may assume to be due to respiration and combustion, there being a little of the latter in the subway. This increase is absolutely of no consequence and does not in any way render the air less healthful or suitable for respiration.

The composition of the air exhaled from the human lungs is given by Dr. Billings as follows:

	PER CENT.	PARTS IN 10,000
Oxygen.....	15.4	1540.
Nitrogen.....	79.2	7920.
Carbon Dioxide.....	4.37	437.

Very respectfully yours,

CHARLES F. CHANDLER.



COLUMBIA UNIVERSITY STATION ENTRANCE.

The great number of station openings, usually eight per station, the shortness and directness of the stairways, the opportunity for winds to descend into the subway at one side and be exhausted by suction on the other side, the inhaling and exhaling action of trains, and the difference in thermometric and barometric conditions conspire to produce an excellent automatic ventilating system. Hence the satisfactory results found by Dr. Chandler.

CONTRACT NO. 2.

During the year the work on Contract No. 2, the extension from the Post Office to South Ferry, and thence to Brooklyn, has progressed favorably. A full description of the work to be performed and the methods followed was given in the report of 1903. The line thus contracted for consists of 3.47 route miles, and 7.6 miles of track, as follows:

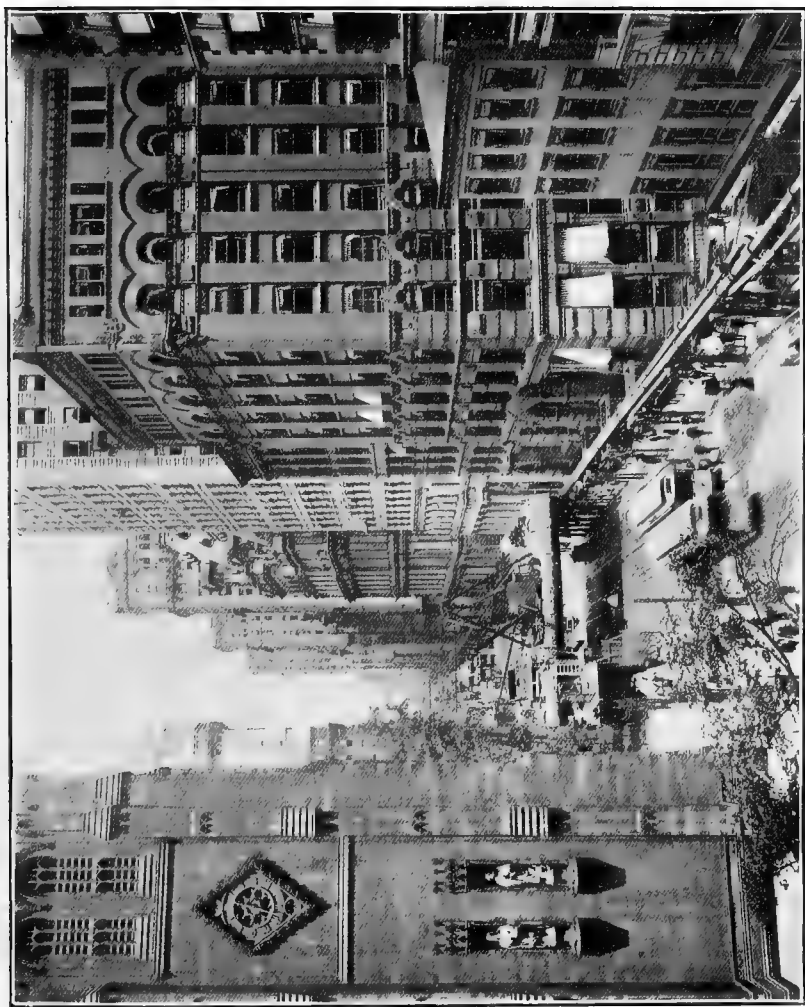
NO. OF TRACKS	* LENGTH, MILES
2	2.82
3	0.65
Total.....3.47	

Of the route 2.23 miles are being built in open excavation, but roofed over during construction, and 1.24 miles in cast-iron lined tubular tunnels, of which latter 1.13 miles are beneath water level, with a maximum depth of 96 feet. The contract for this extension was executed on September 11, 1902, but it provided that no street excavation was to be made until the steel for the framework had been fabricated and delivered. Permission to begin

street work was not given by the Chief Engineer until September 23, 1903, for the portion in the neighborhood of Fulton street, and on November 13 and December 24 of the same year for the remainder of Broadway as far as Battery place. On January 1, 1903, permission was granted for the work in Battery Park, the East river tunnel and its approaches in Manhattan and in Joralemon street, Brooklyn. On March 19, 1903, a permit for work in Flatbush avenue, Brooklyn, became effective, and on September 29, 1904, permits were issued for portions of Joralemon and Fulton streets in the latter borough.

It will be seen, therefore, that actual street work had been in progress at the close of 1904 for a trifle more than one year and a quarter at Fulton street, for less elsewhere on Broadway, and one year and five months at Battery Park, as actual work in this locality did not begin until August, 1903, although permit was issued in January. Likewise, as above noted, permission was granted as early as March, 1903, for the work in Brooklyn, but actual work did not begin until April 6, 1904, so that the work there has been in progress a little over nine months. At the close of the year the main structure, including the Fulton street station was finished as far south as Cortlandt street, leaving but the station decoration and parts of the stairways to finish, and some pipe reconstruction and repaving to complete. South of Ann street to the end of Section 1, at Battery place, excavation was 94.2 %, steel erection 80 %, and concreting 78.1 % finished. On Section No. 2 (Battery Park Loop), on which work had been in progress for less than one year and a half, excavation was 98%, steel erection 76%, and concreting 78% completed.

From these figures it will be seen that much more rapid progress had been made on Contract No. 2 than on Contract No. 1, due to the experience gained on the latter. This was accomplished in spite of the more rigid requirements of the specifications of Contract No. 2, calling for the maintenance of the street surface from curb to curb during construction. This work was also carried on beneath a very heavy vehicular traffic, actual counts of vehicles, exclusive of bicycles and push carts, showing:



LOWER BROADWAY DURING CONSTRUCTION.



ENTRANCE TO FULTON STREET STATION.

RECORD OF SURFACE TRAFFIC

At Broadway and Fulton St.

Date 1904	TIME	BROADWAY				FULTON STREET			
		CARS		TEAMS		CARS		TEAMS	
		NORTH	SOUTH	NORTH	SOUTH	EAST	WEST	EAST	WEST
Feb. 24-26	10:30-12 Noon. Aver. per Hour	118	108	203	291	14	12	134	154
Mch. 2	8 A.M.-6 P.M. Aver. per Hour	108	103	190	220	13	13	106	121

The most difficult piece of construction in connection with Contract No. 2 was building the subway in front of Trinity Church. As it was known that the foundations beneath the spire were but shallow and founded on sand, the spire was exposed to some danger. The Trinity Corporation appointed Messrs. Daniel E. Moran and Edwin S. Jarrett, Engineers, to watch the work in their interest. Borings determined that the foundations beneath the spire, which has a height of 286 feet, were 9 feet 3 inches beneath the sidewalk, that they extended longitudinally 52 feet and were distant laterally 9 feet from the back of the subway wall. As the depth of the subway was 24 feet, the excavation had to be carried 15 feet below the spire foundations. It was finally decided to divide a length of 57 feet in front of the spire into three sections, and to excavate first the central one as a pit sheeted on all sides, and to construct within such pit the concrete floor, and the large mass of concrete forming the platform bench and side wall. When this central section should be in place, then the excavation and construction first of one and then of the other should be taken up.

In order not to leave voids behind the wall through the withdrawing of sheet piling or its subsequent rotting if left in place, it was decided to use steel channels as sheet piling, to ram the

concrete against the inside face, and to leave such sheeting in place below the level of the foundations. The sand encountered varied in quality from ordinary masonry sand to that of a fineness suitable for brick mortar. The sand was above ground water level. The work was successfully carried out without any measurable settlement or movement of the spire. Plans are attached giving the details of the method of excavation.

So nearly completed was the Fulton street station on December 31 that arrangements were being made to put it in operation early in January, leaving the decorative tiling on the walls, which had been delayed by labor troubles, to be finished later. Operation began January 16, 1905. The work had been done therefore in less than one year and a half.

The East river tubes made satisfactory progress from South Ferry, but less so in Joralemon street, where considerable damage had been done to the abutting buildings.

At the Manhattan end rock, at times good and at other times poor, requiring timbering, was encountered.

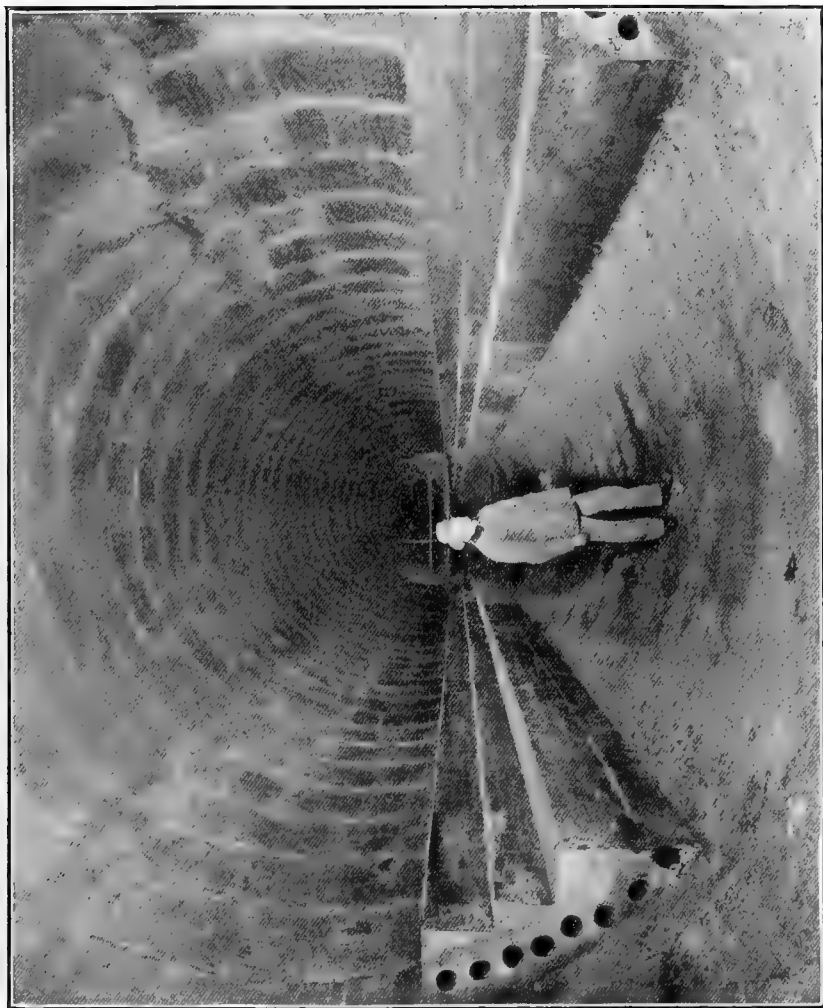
Progress from the shafts in Battery Park beneath the river has been as follows during the year 1904:

	SOUTH HEADING	NORTH HEADING
Heading Advance	1121 feet	1139 feet
Number of Shifts (8 hours)	851	843
Bench advance	1113 feet	1162 feet
Number of Shifts (8 hours)	899	899
Lining completed	518 feet	435 feet

This work was done by ordinary tunneling methods, no shield being required. Air pressure varied from a minimum of 8 lbs. to a maximum of 25 lbs., the maximum hydrostatic pressure corresponding to 35 lbs.



EAST RIVER TUNNEL SHOWING AIR LOCKS.



EAST RIVER TUNNEL LINED WITH CONCRETE; DUCTS IN PLACE.

In Brooklyn work was continued from the shafts at Henry street. To the east both headings were finished. To the west the north tube was carried 155 feet past the proposed shaft at Furman street, while the south tube was advanced 750 feet from the shaft near Henry street. Owing to the difficulty to maintain air pressure, due to leaks through the soil, but one tube could be worked at a time. This accounts for the lack of progress in the south tube. The advance made is summarized:

	S. E. HEADING Shield No. 1	N. E. HEADING Shield No. 1	S. W. HEADING Shield No. 2	N.W. HEADING Shield No. 2
Progress	6 feet	41 feet	750 feet	1204 feet
No. of Shifts . . .	7	29	345	777

On Fulton street and Flatbush avenue frequent conferences were held with the property owners and the work was laid out so far as possible to suit their convenience. In general the open cut method was adopted, but fixed points, one in Flatbush avenue and one in Fulton street, were adopted through which all spoil was hauled through the excavated trench on completed subway and thence elevated to the surface. The method of construction by reinforced concrete described and illustrated in the report for 1902 has proved eminently satisfactory.

The quantities of work done under the principal items during the year 1904 and to date have been as follows:

CONTRACT No. 2.

ITEM	REGULAR WORK		EXCESS WORK		TOTALS
	Pre- viously report'd	Done during 1904	Pre- viously report'd	Done during 1904	Regular and Excess Work
Earth Excavation..Cu. Yds..	38,372	176,216	5,487	13,313	233,388
Rock Excavation... "	445	3,602	.....	162	4,209
Tunneling..... "	17,490	37,310	1,696	1,594	58,090
Concrete Masonry... "	1,726	33,511	80	1,385	36,702
Brick Masonry..... "	6	1,875	.....	141	2,022
Cut Stone Masonry.. "	.....	.....	80	1,309	1,389
Steel Erected..... Tons	131	3,138	.....	.....	3,269
Cast-iron Erected... "	3,523	6,068	.....	.....	9,591
Cement Delivered... Bbbs.	6,457	55,354	61	1,310	63,182

The totals of this table added to the similar totals given above for Contract No. 1, will give the total amount of such work done by the Board to date.

Including the vouchers for December the total estimates made on account of Contract No. 2 have been as follows:

Year 1903\$202,457.06

Year 1904 620,425.62

Total\$822,882.68

As was explained in the previous reports, the contract price for contract No. 2 was, for construction, \$2,000,000, while the estimated and sub-contract cost is about \$10,000,000. The actual value of work already done is therefore five times the official estimates, or say \$4,114,413.

The work on Contract No. 2 has continued under the charge of Division Engineers Albert Carr and Robert Ridgway and their



METHOD OF SUPPORTING ELEVATED COLUMNS ON FLATBUSH AVENUE, BROOKLYN.

staffs, the former having charge of Section 1, on lower Broadway, Manhattan, the latter of the remainder of the contract.

In addition to the expenditures reported above for contracts No. 1 and No. 2, the Board has incurred some expense directly for readjusting sidewalks in the vicinity of kiosks over the stairways, waterproofing vaults, etc. The amount of such expenditures to date is \$9,589.

The total value of all work done by the Board to date, taking the value of work under contract No. 2, is as follows:

Contract No. 1, regular	\$33,614.000
Contract No. 1, extra	4,205,251
Contract No. 2, regular	4,114,413
Total	\$41,933,664

The total expense of the engineering department to date, including all salaries, office rent and expenses, instruments and supplies, amounts to \$2,119,695.

In this expenditure is included work done in the preparation of plans not yet executed, in studies for Brooklyn Bridge terminals and for other objects not connected with Contracts No. 1 or No. 2. Without taking any credit for such outside work, the cost of engineering and superintendence is 5 per cent. of the value of the work accomplished.

During the year 1904 the total casualties on the work for Contract No. 1 amounted to 102, of which 12 were fatal, and of this total number 86 were employees. The casualties due to work on Contract No. 1 naturally decreased over previous years on account of the work nearing completion.

On Contract No. 2 during 1904, 14 accidents occurred to workmen, of which two proved fatal.

The Board having instructed the Chief Engineer to prepare general plans for new lines in accordance with his reports dated February 19 and March 12, 1903 (*vide* report for 1903), he submitted on December 29, 1904, the following report with the necessary plans, the general summarized maps being appended:

NEW YORK, December 29, 1904.

HON. A. E. ORR, *President*, RAPID TRANSIT BOARD:

My dear Sir:—I have the honor to lay before the Board the general plans of additional rapid transit lines, as comprised by maps and profiles, in the boroughs of Manhattan, Brooklyn and The Bronx. These new lines can be divided into three classes: 1st—Those that would be open to competitive bidding; 2d—Those that would be extensions of the existing subway system; 3d—Those that would be extensions of the present elevated systems.

The plans that are now laid before the Board consist of three key maps, showing the boroughs of Manhattan, Brooklyn and The Bronx separately, with the existing subway systems shown in blue, and the proposed new lines shown in red, and a set of maps worked out in further detail on a larger scale, giving both map and profile of the several lines.

The two companies now operating the transportation lines in the boroughs of Manhattan and The Bronx have already publicly signified their intention of bidding upon any new contracts that the Commission might offer, and to this end these companies submitted some time ago tentative plans of their own. These tentative plans were subsequently considered by your Engineer, and after consultation with the Engineers of both companies, were so modified that one general plan could be prepared, comprising the essential features of both plans, and your Engineer in his report dated April 22, 1904, explained to the Board how a general plan could be prepared and be so arranged that not only the two existing companies could bid on such portions as they desired to construct, but would also render it possible for any independent group to enter the field and make a tender to the Board for the construction of an independent rapid transit system. The plans herewith presented contain the salient features of the above report, modified in certain details, as after further study seemed more desirable, and as the experience with the existing subway would seem to indicate as wise.

The general theory of the plan herewith submitted provides for a through line from the borough of The Bronx on the east side of the city to the Battery, and on the west side from the Battery to Forty-second street. This would be an operative railroad in itself. By making a cross connection at Thirty-fourth street, and by making connections with the subway at Battery Park, at Forty-second street and Park avenue, and in the neighborhood of Forty-second street and Broadway, the Interborough Company, if

awarded the contract, could, by building the lines north from Forty-second street on the east side and south from Forty-second street on the west side, make with the present subway complete east and west side railways, extending from the Battery to points beyond the Harlem river, and with a connection passing beneath the East river to the borough of Brooklyn. Or should the New York City Railway Company be awarded the contract such company could, by omitting the connecting link from Park avenue to Lexington avenue and from Thirty-fourth to Forty-second streets on Seventh avenue, and instead, by building the line under Thirty-fourth street, connecting the east and west side lines, be able to offer to the city a through line from the Harlem river to the Battery on the east side, and on the west side as far north as Thirty-fourth street, which could be extended northerly as occasion might demand.

To accomplish this result, lines are indicated on Key Map No. 1 for the borough of Manhattan, by which you will see that the route extends on the east side, beginning at South Ferry; thence along South street, across Coenties slip to Front street; thence along William street under the Brooklyn bridge, under Park Row to Chambers street to Broadway, and under Broadway to Union square; thence passing beneath the subway under Fifteenth street to Lexington avenue, and under Lexington avenue and the Harlem river and private property to a terminal loop under Third avenue to East One Hundred and Forty-second street and Morris avenue, with a branch continuing under Morris avenue to connect with the subway at East One Hundred and Forty-ninth street. Then a west side line commencing at the place of beginning on the east side line at Battery Park, under Battery Park and Greenwich street, West Broadway, Fifth avenue, Broadway, Twenty-fourth and Twenty-fifth streets to Seventh avenue, and under Seventh avenue to a connection with the present subway between Forty-second and Forty-fifth streets, together with a crosstown connection between Seventh and Lexington avenues at Thirty-fourth street, and connections with the present subway at Park avenue, south of Forty-second street, under the intervening streets and private property to Lexington avenue at about Forty-fourth street, and at Battery Park.

On the east side line, on account of the narrowness of the streets and other local conditions, it would be possible to construct but two tracks from South Ferry to Thirty-fourth street and Lexington avenue, but from that point north and on the connecting line between Park avenue and Lexington avenue and under Lexington avenue to and across the Harlem river to the

terminal loop at One Hundred and Forty-second street it would be possible and desirable to construct four tracks, placing them in tiers, the local tracks above and the express tracks below. On the west side line there should be four tracks, extending south from Forty-second street to some point below Chambers street, depending upon the available width of the streets, and thence with two tracks to connect with the east side line or the subway at the Battery. As you will see by referring to the proper detail map this arrangement of tracks has been worked out by making a loop beginning at Murray street, passing under private property at Murray street, Greenwich and Barclay streets, and returning thence to the four track system. This loop could be so arranged that the local trains could turn at this point and the express trains be run to Battery Park, making all stops below Barclay street in the same way as it is proposed to run trains south from the Post Office along Broadway on the present subway.

The crosstown connection under Thirty-fourth street should be so arranged in the event of the west side line terminating at Thirty-fourth street to provide a northerly outlet for such line connecting with the lower tier of tracks under Lexington avenue, and so avoiding any grade crossings at the junction. The line on Park avenue has already been arranged in our present construction to provide a suitable junction between the existing line and the east side line. North of Forty-second street and Broadway the present subway will have to be partially reconstructed to permit suitable junction to be made. This, however, is possible.

In the laying out of traffic routes it is obviously desirable, so far as possible, to avoid conflicting with existing lines; in this way the public will receive the best service by getting a multiplicity of routes rather than a duplication of facilities on the same routes. The present plans accomplish this result, except on the line south of Third street on the west side where a duplication of routes with the existing elevated railway seems to be unavoidable, provided that the new route is to be kept as near Broadway as possible in order to meet the traffic demands. East of West Broadway the streets are too narrow to be used for railway purposes.

The west side line as laid out would connect with the new station of the Pennsylvania Railroad facing Seventh avenue. Should the Interborough Rapid Transit Company be awarded the contract, and not be a bidder for the line under Thirty-fourth street, this latter route could then be made use of by the company proposing a moving platform, which could become a bidder for this portion of the general plan, to be extended further east and west if desired. In the plan proposed by the New York City

Railway Company, a crosstown line under Chambers street was suggested, from Broadway to West Broadway. In the plan submitted herewith this has been omitted as involving very serious and expensive construction features, in order to provide a proper junction at West Broadway and also with the line under Broadway. The plans, however, could be amended so as to include this link if the Board should deem it proper.

In order to provide for a division of these plans, so as to accommodate various bidders, the whole scheme has been divided into the following sections with their approximate lengths:

Section A-B, from Battery Park to Lexington avenue at Forty-fourth street, 23,600 feet.

Section B-C, from Lexington avenue and Forty-fourth street to Morris avenue, including the terminal loop, 29,850 feet.

Section C-D, from Morris avenue to connect with the subway at East One Hundred and Forty-ninth street, 2,000 feet.

Section A-E, from Battery Park to Thirty-fourth street and Seventh avenue, 20,850 feet.

Section E-F, from Thirty-fourth street and Seventh avenue to connect with the present subway between Forty-second and Forty-sixth streets, 3,300 feet.

Section E-G, from Thirty-fourth street and Broadway to Thirty-fourth street and Lexington avenue, 3,600 feet.

Section H-B, from a connection with the present subway under Park avenue south of Forty-second street to Lexington avenue at Forty-fourth street, 2,000 feet.

The total length of all the above lines is 85,200 feet, or 16.15 miles.

The Board by special resolution directed me to lay out a line extending from Fort Hamilton under Fourth avenue to Flatbush avenue, and thence under Flatbush avenue to and across the Manhattan bridge to the terminus of the said bridge in Manhattan. This has been done, as shown on outline of the map No. 2, and in detail on the accompanying sheets. I beg leave to point out to the Board that this route will be an expensive one to build, and is paralleled its whole length by an elevated railway, either on the adjacent street or immediately above it, and on reaching Manhattan will not be able to provide through facilities except by transfer. Should it be decided to build a subway line under Fourth avenue to Fort Hamilton I beg leave to call the attention of the Board to an alternative of the scheme, namely, by diverting from Fourth avenue to Hamilton avenue, thence under Buttermilk Channel to Governor's Island, and under the East river to Battery Park, and thence, if desired, by tunnel under Greenwich street

to connect with the low level loop at Barclay street. This would provide a direct through communication with South Brooklyn.

Of lines in the second category, those which are extensions of the existing subway, I lay before the Board one in Brooklyn and two in The Bronx.

The line in Brooklyn is the one for which the junction has already been provided at the Prospect Park Plaza, and extending thence easterly under the Eastern parkway. This is a section of Brooklyn to which the attention of the Board has already been directed, and is without direct transit facilities.

The lines in The Bronx are first, an extension of the present system from Kingsbridge northerly along Broadway to Van Cortland Park. Efforts have been made, I am informed, by the Interborough Rapid Transit Company to arrange terms with the New York Central to use the Putnam Division of that Company northerly to Kingsbridge, but without satisfactory results. It is desirable that the west side system should go to Van Cortlandt Park, and I therefore suggest an extension of the subway system from Kingsbridge to the Park, but at this point necessarily by elevated structure.

The second line in The Bronx is one extending the present subway system from its terminus at One Hundred and Eightieth street and the Boston road. This portion of the present system is an elevated structure, and immediately north lies Bronx Park, and that portion of Bronx Park nearest to it having been set aside for the Zoological Gardens. North of Bronx Park lies a section extending to Mount Vernon, not now reached by any rapid transit lines. As you will see by the detail plans it is possible to extend the present elevated structure over Boston road to Bronx Park, and then to take advantage of the topography of the ground to grade the surface of Bronx Park at its southerly end, so as to avoid any elevated structure in Bronx Park, and by building the railway on a descending gradient to pass beneath the roadway leading from the principal entrance on the Boston road, and thence beneath the surface of the park to its northerly limits at the Bronx river. The river will be crossed on an ornamental bridge, and thence the railway will again be taken under ground beneath the Pelham parkway, and, by making use of private property and a suitable incline, will pass from subway to elevated and so over the White Plains road to the City line. I would especially direct the attention of the Board to this line, the details of which should be carefully considered. The area of Bronx Park is large, and even that portion of it comprising the Zoological Gardens covers an area whose length north and south is about one mile.

The only means of reaching the park conveniently for the public is the Harlem Railway line to Fordham station, and thence by a long walk to Bronx Park; secondly, by the subway system to the Boston road, the terminus of which is from the centre of the Zoological Gardens; thirdly, by the surface cars, which are obviously a slow means of progress on account of the distance to be covered. If the park is not to be invaded by a railway, the general public will be compelled to take one of the three mentioned lines of communication, and either submit to a long time in travel by the surface cars or be compelled to walk a long distance from either of the rapid transit lines. As you will see by the detail plans it is possible to build a railway which, for the greater part of its length, will be under ground, and the small portion of its length where exposed can be so arranged as to be entirely hidden from view by trees and shrubbery.

The district north of The Bronx needs facilities, which can be furnished only by a line such as has been described or by a more circuitous route to the east of Bronx Park. Easterly of the present system no route has been suggested in the borough of The Bronx. Plans are now under way by the New York, New Haven and Hartford Railway Company for adding four additional tracks to their present system, and plans are also under way by private companies looking to the building of new lines in this portion of the city. It would seem wise, therefore, to leave that portion to be developed by private capital, as being more expeditious and without drawing upon the city's credit.

The length of lines suggested by extending the subway system is as follows:

Eastern parkway	6 miles
Van Cortlandt Park	1.1 miles
Mount Vernon	4.8 miles
Total	11.9 miles

As to lines under the third category, namely, the extensions of the present elevated system:

I have already made two reports to the Board, under dates of February 19 and March 12, 1903, for the lines of the boroughs of Manhattan and The Bronx and Brooklyn. In these reports I made certain suggestions looking to the extension of the present elevated system. These suggestions I beg leave to reiterate, especially the extension of the lines in Brooklyn and the improvement of the Manhattan terminals of the bridges to Brooklyn, so that the present lines may better carry the traffic that is pressing

on them. In Manhattan and The Bronx, there is one particular extension that I have especially in mind, and that is the extension of the Eighth Avenue Division of the Manhattan Railway across the Harlem river, thence by tunnel beneath the ridge under One Hundred and Sixty-first street to Jerome avenue, and thence by elevated line over Jerome avenue to Woodlawn. The Jerome Avenue line is one which has been discussed before the Board on many occasions, and the advocates of subway and elevated construction have both been heard. The principal property-owners who have in the past opposed elevated railway construction have recently informed me that they have been converted to the other view and believe it would be best for that portion of the city to avail itself of an elevated line as rapidly as possible, and to this end they preferred the extension of the Manhattan system. I have therefore placed this line upon the map, and suggest it for your consideration.

I would wish to especially call attention to one other extension, and that is, the reconstruction of the Second Avenue division of the Manhattan Elevated Railway. The lesson to be learned by the present subway is the great advantage of an express service, and especially an express service that runs continuously in both directions. In my previous report I advised the reconstruction of the Second avenue line by building it with four tracks, carrying the two additional tracks over the present elevated system at Chatham square to City Hall. This I beg leave to repeat. The borough of The Bronx, especially that portion of it contiguous to the Suburban division of the Manhattan system and the Westchester Avenue line of subway system has lately increased tremendously in population. This increase will, with the proposed facilities to be furnished by the New York, New Haven and Hartford Railroad Company and other companies in the easterly portion of The Bronx, demand additional facilities. Such facilities can be afforded by converting the Second Avenue line into a four-track system. The Second Avenue line is sufficiently strong to carry four tracks, so that the superstructure alone would have to be remodeled.

Of crosstown lines, with the exception of that under Thirty-fourth street, I have made no recommendation. Crosstown lines should be worked independently of the existing north and south lines, transferring to them. At present it would seem as if the surface lines could readily accommodate this transfer business. Subsurface crosstown lines, however, can be laid out at any time, as each one would be an independent structure.

In regard to the expense involved, it is impossible to make a

close estimate until further details have been decided upon by the Board. For the Fourth Avenue line in Brooklyn, I can make no estimate until the Board should decide whether the line should proceed via the Manhattan bridge or via the Brooklyn tunnel. The new lines in Manhattan to be built under Rapid Transit contracts and paid for by the city will cost about \$40,000,000. The extensions to the subway system, including the Eastern parkway in Brooklyn and the two lines in The Bronx, will cost about \$9,000,000. No estimate is made for extending or improving the existing elevated lines, as such expense will fall on the companies.

Respectfully yours,

WM. BARCLAY PARSONS,
Chief Engineer.

The following tables give the details of sewer construction, and the total amount of work accomplished during the year, and to date:

DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1904

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT. SIZE
Beekman Street....	Degnon-McLean Contracting Co.	May 16, 1904	12" vit. pipe.... 12" iron pipe ...	55 51	55 51	.... ....	390—12", vit. pipe 120—12" c.i. pipe
Pearl and Duane Streets.....	Cunningham & Kearns	July 23, 1900	5' 0" cir. brick.. 4' 3" cir. brick.. 4' 0"x2' 8" bk.. 24" iron pipe ... 15" vit. pipe.... 15" invert.....	.... .... .... .... .... ....	106 189 282 717 156 3 407	.... .... .... .... .... ....	235—5' 0" cir. brick 735—4' 0" cir. brick 186—4' 0"x3' 6" bk 50—4' 0"x2' 8" bk
Worth Street.....	Degnon-McLean Contracting Co.	Feb. 12, 1903	4' 0"x2' 8" bk.. 15" vit. pipe....	 31	1754 25 183	.... ....	1200 290—4' 0" cir. brick
Canal Street.....	James Pilkington	May 7, 1900	4' 6"x7' 0" bk.. 6' 6" cir. brick.. 5' 6" cir. brick.. 4' 6" wooden.. 4' 0"x2' 8" bk.. 18" invert.....	31	208 1151 1833 1035 936 55 111	.... .... .... .... .... ....	1200—4' 0" cir. brick 355—4' 0"x3' 0" bk 610—4' 0"x2' 8" bk 970—3' 6"x2' 8" bk 40—3' 6"x2' 4" bk 235—15" pipe
					5121		3410

DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1904—Continued

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT. SIZE
Marion Street.....	Degnon-McLean Contracting Co.	Jan. 29, 1901	4' 6"x2' 8" bk...	....	431	....	431—4' 0"x3' 0" bk
Spring Street.....	Degnon-McLean Contracting Co.	Sept. 5, 1902	15" vit. pipe....	8	70	....	105—12" vit. pipe
Mulberry Street....	Cunningham & Kearns.	May 31, 1900	4' 0"x2' 8" bk...	....	228	....	160—4' 0"x2' 8" bk
Bleecker Street and Connections	James Pilkington	Mar. 26, 1900	4' 0" cir. brick... 4' 0"x2' 8" bk... 30" iron pipe.... 24" iron pipe....	 8	563 353 169 36	.... .... .... ....	560—5' 4"x4' 6" bk 325—4' 0"x2' 8" bk
							885
Astor Place.....	Holbrook, Cabot & Daly Con- tracting Co.	Nov. 11, 1903	15" vit. pipe.... 12" vit. pipe....	1 82	91 108	.... ....	
East 9th Street...	James Pilkington	July 30, 1900	18" vit. pipe....	83	199	....	50—3' 2"x2' 0" bk
							111

DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1904—Continued

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLET'D	OLD SEWER REMOVED LIN. FT. SIZE
East 10th Street...	Cunningham & Kearns.	May 31, 1900	3' 6"x2' 4" bk... 30" c.i. pipe....		313		240—4' 0"x3' 1" bk
				.....	16	.....	
East 22d Street...	Cunningham & Kearns.	June 11, 1900	4' 6" cir. brick... 42" iron pipe... brick chamber...		1979		2041—4' 2"x4' 0" bk
				.....	114	.....	
				2	7	.....	
East 31st Street...	Holbrook, Cabot & Daly Con- tracting Co.	Sept. 23, 1901	brick chamber... 30" iron pipe...		18		75—4' 0"x2' 7" bk
				.....	113	.....	
				.....	131	.....	
East 41st Street...	James Pilkington	Dec. 28, 1901	brick chamber... 4' 0"x2' 8" bk... 24" iron pipe... 16" iron pipe...		12		250—4' 0"x3' 0" bk 169—4' 0"x2' 8" bk
				20	775	.....	
				.....	96	.....	
				.....	449	.....	
					1332		419

DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1904—Continued

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT. SIZE
West 45th Street..	James Pilkington	Jan. 21, 1901	6' 6" cir. brick.. 6' 0" cir. brick.. 5' 3"x3' 6" bk.. 3' 6"x2' 4" bk.. 36" iron pipe....	 14	177 848 304 14 117 1460	.... .... .... .... ....	1620—4' 0"x2' 8" bk
West 54th Street..	Cunningham & Kearns.	Oct. 3, 1900	4' 0"x2' 8" bk...	....	521	....	480—4' 0"x2' 8" bk
59th St. and Circle	Naughton & Co.	Dec. 13, 1900	15" vit. pipe....	....	398	....	66—3' 6"x2' 0" bk
Broadway, East Side, 60th to 67th Streets....	William Bradley	Apr. 15, 1901	4' 0"x2' 8" bk.. 3' 6"x2' 4" bk.. 18" vit. pipe.... 15" vit. pipe....	33 75	955 628 318 270	.... .... .... ....	70—4' 0"x2' 8" bk 186—3' 7"x2' 5" bk 225—3' 4"x2' 5" bk 333—18" vit. pipe 720—15" vit. pipe 1534
Broadway, West Side, 62d St....	William Bradley	June 16, 1902	15" vit. pipe....	108	2171 111	....	90—4' 0"x2' 7" bk

DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1904—Continued

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT. SIZE
65th Street and Broadway.	William Bradley	Sept. 10, 1904	4' 0"x2' 8" bk... 30" c.i. pipe....	....	433	....	410—4' 0"x2' 8" bk
				....	128	....	90—18" vit. pipe
				....	561	....	500
72d Street and Broadway.	William Bradley	Oct. 16, 1901	30" c.i. pipe.... 4' 6" cir.bk. (ch.) 3' 6"x2' 4" bk...	....	654	....	240—5' 0"x4' 0" bk
				....	22	....	619—3' 6"x2' 4" bk
				....	701	....	144—3' 5"x2' 5" bk
West 81st Street..	William Bradley	Sept. 10, 1900	6' 0" cir. brick.. 48" iron pipe....	....	1377	....	1003
				....	313	....	375—5' 8"x5' 0" bk
				....	114	....	
Broadway, East Side, 84th to 86th Streets.	William Bradley	Oct. 24, 1901	3' 6"x2' 4" bk.. 24" iron pipe....	21	487	....	528—3' 6"x2' 4" bk
				....	60	....	
				....	547	....	

DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1904—Continued

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT. SIZE
West 96th Street.	William Bradley	Mar. 16, 1903	5' 6" cir. brick...	....	13	....	95—6' 9"x6' 2" bk
			3' 6"x2' 4" bk...	....	139	....	317—3' 6"x2' 4" bk
			54" iron pipe...	....	82	....	
			30" iron pipe...	....	178	....	
			12" vit. pipe....	....	91	....	
West 108th Street.	Wm. F. Norton, John Shields	Sept. 12, 1900	4' 0" cir. brick...	....	430	....	504—4' 0" cir. bk
			4' 0"x2' 8" bk...	....	111	....	94—4' 2"x3' 0" bk
			24" iron pipe....	....	115	....	48—4' 0"x2' 8" bk
					656		646
West 110th Street.	Farrel, Hopper Co.	July 19, 1900	6' 6" cir. brick...	....	1116	....	100—4' 0"x2' 8" bk
			4' 0"x2' 8" bk...	....	25	....	30—3' 6"x2' 4" bk
			3' 6"x2' 4" bk...	....	145	....	
			42" iron pipe....	....	183	....	
					1469		130

DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1904—Continued

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT.	SIZE
Lenox Avenue....	Cunningham & Kearns.	Nov. 1, 1900	5' 0" cir. brick. 4' 4" cir. brick..	....	1468	....	290—4' 0"x2' 8" bk	
				....	153	....	1000—3' 6"x2' 4" bk	
					1621		1350	
West 115th Street.	John Shields	Jan. 29, 1901	3' 6"x2' 4" bk... 30" iron pipe....	....	526	....	334—3' 6"x2' 4" bk	
				....	48	....	216—15" vit. pipe	
					574		550	
West 124th Street.	Cunningham & Kearns. Joseph Burns	July 23, 1900	3' 6"x2' 4" bk... 15" vit. pipe....	11	1124	....	70—3' 0" cir. bk	
				....	116	....	373—3' 6"x2' 4" bk	
					1240		788—12" vit. pipe	
West 142d Street and Broadway.	James Pilkington	Nov. 13, 1900	4' 0" cir. brick... 4' 0"x2' 8" bk... 3' 6"x2' 4" bk... 48" iron pipe....	6	142	....	262—4' 0" cir. brick	
				36	36	....		
				5	5	....		
				48	80	....		
				95	263			

DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1904—Continued

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT.	SIZE
142d Street and Lenox Avenue.	Norton & Dalton	July 24, 1902	4' o" x 2' 8" bk. 15" vit. pipe....		812		135—4' o" x 2' 8" bk 320—15" vit. pipe.	
				.....	105	.....		
149th Street and Railroad Ave...	J. C. Rodgers	Aug. 26, 1901	7' o" x 10' o" bk. 42" iron pipe.... 14" iron pipe....		917		455	63—6' o" x 5' 4" bk
				.....	30	.....		
				.....	97.5	.....		
Broadway, West Side, bet. 156th and 157th Sts...	John B. McDon- ald.	Dec. 7, 1903	15" vit. pipe.... 12" vit. pipe....	82	285		35—12" vit. pipe	
				21	21	.....		
				103	306	.....		
West 157th Street.	Alfred Bradley	July 23, 1900	4' o" cir. brick.. 4' o" x 2' 8" bk.. 3' o" x 2' o" bk.. 48" iron pipe....		392		513—4' o" cir. bk	
				.....	45	.....		
				.....	69	.....		
				.....	121	.....		
					627			

DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1904—Continued

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT.	SIZE
Seventh Ave. and 151st Street (Lenox Ave. Ex- tension)	Lenox Construc- tion Co.	Mar. 2, 1903	9' 6" box, wdn..		315			
			9' 6" cir. brick..	36	1171	....		
			7' 0" cir. brick..	17	581	....		
			5' 6" cir. brick..	....	27	....		
Lenox Ave., East Side, South of 145th Street (Lenox Ave. Ex- tension)	Lenox Construc- tion Co.	June 23, 1904	3' 6"x2' 4" bk. ..		22		45—4' 0"x2' 8" bk	
				53	2116	....		
			4' 0"x2' 8" bk..	45	45	....		
Lenox Ave., North of 144th Street (Lenox Ave. Ex- tension)	Lenox Construc- tion Co.	Mar. 18, 1903	6' 0" cir. brick..		45		655—4' 0"x2' 8" bk	
			5' 6" cir. brick..	....	260	....		
			4' 6" cir. brick..	217	556	....		
			4' 0" cir. brick..	203	223	....		
Grand Totals			4' 0"x2' 8" bk....	14	14		22359	
			42" iron pipe ....	....	365.6	....		
				434	1463.6	....		
				1142	32799.6	....		

DETAILS OF LONGITUDINAL SEWERS TO DECEMBER 31, 1904

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT.	SIZE
Centre St. & Elm St. (Post Office to Great Jones St.)	Degnon-McLean Contracting Co.	Jan. 12, 1901	4' 0" x 2' 8" bk. ...	....	311	....	190—9' 0" x 6' 0" bk	
			3' 6" x 2' 4" bk. ...	....	1168	....	70—4' 5" x 3' 0" bk	
			3' 6" x 2' 4" brick and concrete..	....	466	....	1500—4' 0" x 2' 8" bk	
			3' 0" x 1' 7" bk. ...	....	9	....	3800—3' 6" x 2' 4" bk	
			36" iron pipe....	....	12	....	20—16" iron pipe	
			30" iron pipe....	....	81	....	120—15" vit. pipe	
			24" iron pipe....	....	656	....	640—12" vit. pipe	
			18" iron pipe....	....	492	....	50—8" vit. pipe	
			18" vit. pipe....	....	1951	....	80—5' 0" cir. bk	
			16" iron pipe....	....	353	....	210—4' 0" x 3' 0" bk	
			15" vit. pipe....	....	3609	....		
			6" iron pipe....	21	138	....		
				21	9246		668a	

DETAILS OF LONGITUDINAL SEWERS TO DECEMBER 31, 1904—Continued

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT.	SIZE
Lafayette Place and Fourth Ave (Great Jones St. to 33d St.)	Holbrook, Cabot & Daly Con- tracting Co.	Jan. 7, 1901	4' 0" cir. brick...	....	22	....	1100—4' 0" cir. bk	
			3' 9" cir. brick...	....	204	....	330—4' 6"x3' 5" bk	
			4' 0"x3' 0" bk...	....	477	....	90—4' 1"x3' 7" bk	
			4' 0 x2' 8" bk...	4	260	....	730—4' 0"x3' 0" bk	
			3' 6"x2' 4" bk...	10	1037	....	30—4' 0"x2' 8" bk	
			3' 0"x2' 0" bk...	7	7	....	355—4' 0"x2' 7" bk	
			42" iron pipe....	....	162	....	190—3' 9"x2' 7" bk	
			24" iron pipe....	....	47	....	50—3' 8"x3' 0" bk	
			18" iron pipe....	....	325	....	250—3' 7"x2' 8" bk	
			18" vit. pipe....	....	1089	....	85—3' 7"x2' 7" bk	
			16" iron pipe....	....	258	....	910—3' 6"x2' 4" bk	
			15" vit. pipe....	....	6831	....	80—3' 5"x3' 4" bk	
			12" iron pipe....	....	170	....	15—3' 5"x2' 8" bk	
							65—3' 5"x2' 7" bk	
							490—3' 5"x2' 3" bk	
							540—3' 5"x2' 0" bk	
							200—3' 4"x2' 0" bk	
							200—3' 0"x2' 0" bk	
							25—2' 9"x2' 2" bk	
							140—18" vit. pipe.	
							305—15" vit. pipe	
							200—12" vit. pipe	
				21	10889		6380	

DETAILS OF LONGITUDINAL SEWERS TO DECEMBER 31, 1904—Continued

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT. SIZE
Park Ave., 42d St. and Broadway (41st to 47th Sts.)	Degnon-McLean Contracting Co.	Aug. 22, 1901	4' 0"x2' 8" bk...	9	610	....	222½—4' 0"x2' 8" bk
			4' 0"x2' 8" con- crete	....	104	....	167½—3' 3"x2' 7" bk
			3' 6"x2' 4" bk...	18	808	....	38½—1½ vit. pipe
			3' 6"x2' 4" con- crete	....	18	....	422—12" vit. pipe
			36" iron pipe....	....	80	....	
			30" iron pipe....	....	323	....	
			18" iron pipe....	....	38	....	
			18" vit. pipe....	....	286	....	
			16" iron pipe....	32	643	....	
			15" vit. pipe....	-298.5	1922	....	
Broadway..... (47th to 60th Sts.)	Naughton & Co.	Dec. 22, 1900	14" iron pipe....	57	258	....	
				-182.5	5090	....	4699
			4' 0"x2' 8" bk..	....	152	....	324—4' 0"x2' 8" bk
			3' 6"x2' 4" bk..	....	398	....	170—3' 6"x2' 4" bk
			3' 6"x2' 4" con- crete	....	1162	....	267—2' 5"x1' 7" con- crete
			18" vit. pipe....	....	383	....	2687—15" vit. pipe
			18" iron pipe....	....	254	....	718—12" vit. pipe
			16" iron pipe....	5	106	....	
			15" vit. pipe....	21	3145	....	
				26	5600	....	4166

DETAILS OF LONGITUDINAL SEWERS TO DECEMBER 31, 1904—Continued

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT.	SIZE
Broadway..... (60th St. to 104th St.)	William Bradley	Apr. 29, 1902	3' 6"x2' 4" bk.. 12" vit. pipe...	.... ....	825 301	.... ....	471—3' 6"x2' 4" bk 60—18" vit. pipe 80—15" vit. pipe	
					1126		611	
Broadway..... (104th St. to 125th St.)	John Shields	Aug. 26, 1901	4' 4"x2' 11" bk.. 3' 6"x2' 4" bk.. 18" vit. pipe...	.... .... ....	97 94 41	.... .... ....	92—4' 4"x2' 11" bk 90—3' 6"x2' 4" bk	
					232		182	
Broadway..... (135th St. North)	James Pilkington	July 15, 1901	4' 2"x2' 9" bk.. 4' 0"x2' 8" bk.. 3' 6"x2' 4" bk..	.... .... ....	79 67 155	.... .... ....	75—4' 2"x2' 9" bk 63—4' 0"x2' 8" bk 147—3' 6"x2' 4" bk	
					301		285	
Lenox Avenue.... (135th St. South)	Farrel, Hopper & Co.	Apr. 25, 1902	4' 0"x2' 8" bk ..	....	232	....	218—4' 0"x2' 8" bk 36—3' 0"x2' 0" bk	
							254	
Lenox Avenue.... (135th St. North)	J. C. Rodgers	June 23, 1902	4' 0"x2' 8" bk..	....	21	....	19—4' 0"x2' 8" bk	

DETAILS OF LONGITUDINAL SEWERS TO DECEMBER 31, 1904—Continued

SEWER	NAME OF SUB CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT. SIZE
East 149th Street.	J. C. Rodgers	Nov. 20, 1901	18" vit. pipe.... 15" vit. pipe.... 12" vit. pipe.... 12" iron pipe.... 6" vit. pipe.... 6" iron pipe....	 239 87	710 961 2698 183 159 36	..... ..... ..... ..... ..... .....	710—18" vit. pipe 140—15" vit. pipe 1625—12" vit. pipe
				326	4747		2475
Grand Totals.....				211.5	37484		25751

DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1904—CONTRACT No. 2.

SEWER	NAME OF SUB CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER TO BE REMOVED LIN. FT. SIZE
Fulton Street, New York	James Pilkington	Apr. 21, 1903	3' 6"x2' 4" bk...	....	314	....	5—3' 6"x2' 8" bk
Maiden Lane, New York	James Pilkington	Mar. 2, 1903	3' 6"x2' 4" bk... 3' 0"x2' 0" bk...	.... ....	332 10	.... ....	332—4' 5"x5' 5" bk 10—3' 0"x2' 0" bk
					342		342
State Street, New York	James Pilkington	Nov. 8, 1902	4' 0"x3' 0" bk...	....	336	....	250—4' 0"x3' 6" bk
Jorammon St. at Borough Hall, Brooklyn	Cranford & Mc- Namee.	Mar. 21, 1903	12" vit. pipe....	....	115	....	
Hudson Avenue, Brooklyn	Cranford & Mc- Namee.	Mar. 30, 1903	4' 6"x3' 0" bk... 42" iron pipe.... 15" vit. pipe....	76	2256 30	 74	480—3' 6"x2' 4" bk 745—15" vit. pipe 966—12" vit. pipe
					2286		2191

DETAILS OF LATERAL SEWERS TO DECEMBER 31, 1904—CONTRACT NO. 2—Continued

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET COMPL'D TO DEC. 31, 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER TO BE REMOVED LIN. FT. SIZE
Ashland Place, Brooklyn	Cranford & Mc- Namee.	Not begun	6' 0" cir. brick.. 6' 0"x4' 0" bk.. 60" iron pipe... 36" iron pipe... 18" vit. pipe...	..... ..... ..... ..... .....	..... ..... ..... ..... .....	1072 255 12 420 20	
Grand Totals.....				76	3393	1853	2788

DETAILS OF LONGITUDINAL SEWERS TO DECEMBER 31, 1904—CONTRACT NO. 2

SEWER	NAME OF SUB-CON- TRACTOR	DATE BEGUN	SIZE	LINEAR FEET COMPL'D DURING 1904	LINEAR FEET TO BE COM- PLETED	OLD SEWER REMOVED LIN. FT.	SIZE
Broadway, City Hall to Battery Place.	Degnon Contract- ing Co.	Feb. 8, 1904	3' 6" x 2' 4" bk. . . 3' 0" x 2' 4" con- crete 3' 0" x 2' 0" bk. . . 18" iron pipe. . . .	784 340 24 206	784 340 24 206	370—4' 0" x 3' 0" bk 190—3' 8" x 3' 4" bk 235—3' 7" x 3' 6" bk 100—3' 6" x 2' 4" bk 250—3' 0" x 2' 0" bk	
Fulton St., Bor- ough Hall to Flatbush Ave., Brooklyn	Cranford & Mc- Namee.	Dec. 5, 1904	18" vit. pipe. . . . 18" iron pipe. . . . 15" vit. pipe. . . . 12" vit. pipe. . . .	1354 130	1354 130	1145 240—15" vit. pipe 390—12" vit. pipe	
Flatbush Avenue, Fulton St. to Atlantic Ave., Brooklyn	Cranford & Mc- Namee.	June 29, 1904	18" vit. pipe. . . . 18" iron pipe. . . . 15" vit. pipe. . . . 14" iron pipe. . . . 12" vit. pipe. . . .	326 12 148 436	326 12 148 436	630 710—18" vit. pipe 255—15" vit. pipe 690—12" vit. pipe	
Grand Totals				922 2406	922 2406	1655 3430	

The Department of Inspection of Material practically completed at the close of 1904 all structural work, both mill and shop, for Contract No. 1; also all rail tonnage and track fittings; and there were manufactured ahead and stored at the Foundry of Davies & Thomas Company, Catasauqua, Pa., a large number of cast-iron tunnel segments. Only a small tonnage of station work remained to be done.

The structural work for that portion of Contract No. 2 in Manhattan was also completed, and the balance of work for Contract No. 2 is well under way.

The total weight of steel accepted at the mills since commencing work amounts to:

For Contract No. 1 150,130,456 lbs.

For Contract No. 2 10,913,927 lbs.

Weight accepted during 1904:

For Contract No. 1 6,610,430 lbs.

For Contract No. 2 3,749,923 lbs.

Steel was rolled at the following mills:

	CONTRACT NO. 1	CONTRACT NO. 2
Carnegie Steel Company.....	6,390,059 lbs	2,917,013 lbs.
Pencoyd Iron Works.....	199,439 "	100,840 "
Lukens Iron and Steel Co.....	4,112 "	219,000 "
Central Iron and Steel Co.....	.....	26,545 "
Jones & Laughlins, Ltd.....	.....	28,570 "
Boonton Iron and Steel Co.....	.....	50,105 "
Republic Iron and Steel Co.....	.....	55,250 lbs.
New Haven Iron and Steel Co.....	.....	18,555 "
American Iron and Steel Mfg. Co.....	16,820 lbs.	334,045 "
Totals.....	6,610,430 lbs.	3,749,923 lbs.

This material was distributed for manufacture into finished work at the several branches of the American Bridge Company, and by the Baltimore Bridge Company, as follows:

	CONTRACT NO. 1	CONTRACT NO. 2
Pencoyd branch.....	582,044 lbs.	.....
Trenton branch.....	5,882,265 "	1,435,462 lbs.
Athens branch.....	123,623 "	58,825 "
Brooklyn branch.....	22,498 "	610,994 "
Baltimore Bridge Co.....	.....	1,644,642 "
Totals.....	6,610,430 lbs.	3,749,923 lbs.

At the several shops there remains, unshipped to date, either in course of manufacture or rejected, the following tonnage:

	CONTRACT NO. 1	CONTRACT NO. 2
Keystone branch.....	1,494,060 lbs.	.....
Pencoyd branch.....	89,824 "	22,200 lbs.
Trenton branch.....	1,629,375 "	.....
Athens branch.....	239,139 "	42,818 lbs.
Brooklyn branch.....	.....	563,707 "
Baltimore Bridge Co.....	.....	28,139 "
Totals.....	3,452,398 lbs.	656,864 lbs.

This to be credited :

	CONTRACT NO. 1	CONTRACT NO. 2
To 177th St. & Boston Road Yd..	350,669 lbs.	Sec. 1, 585,907 lbs
To Subway Station Work.....	279,217 "	Sec. 2, 28,139 "
To Subway Line Work.....	2,822,512 "	Sec. 3, 42,818 "
Totals.....	3,452,398 lbs.	656,864 lbs.

During 1904 there were made 2,425 tensile tests on structural rolled material. These represent :

817 Heats on Contract No. 1.

358 Heats on Contract No. 2.

Of the former, 13 represent material not covered by regular specifications on which a concession was made; and of the latter, 21 represent rivet, tie rod and anchor bolt material.

The results of all accepted tests on regular material show :

30.37 per cent. or 448 tests giving an average minimum ultimate strength per square inch between 58,000 lbs. and 60,500 lbs. for Contract No. 1 59,370 lbs.

42.32 per cent. or 248 tests, giving an average minimum ultimate strength per square inch between 58,000 lbs. and 61,000 lbs. for Contract No. 2 59,840 lbs.

17.97 per cent. or 265 tests giving an average maximum ultimate strength per square inch between 63,500 lbs. and 66,000 lbs. for Contract No. 1 64,730 lbs.

9.39 per cent. or 55 tests giving an average maximum ultimate strength per square inch between 65,000 lbs. and 68,000 lbs. for Contract No. 2 66,340 lbs.

51.66 per cent. or 762 tests giving an average ultimate strength per square inch, approximating the mean of the specification requirement (62,000 lbs.) for Contract No. 1 61,830 lbs.

48.29 per cent. or 283 tests giving an average ultimate strength per square inch, approximating the mean of the specification requirement (63,000 lbs.) for Contract No. 2 62,580 lbs.

The average ultimate strength of all accepted regular material tests was:

For Contract No. 1 61,610 lbs.

For Contract No. 2 61,770 lbs.

The average elastic limit of all accepted regular material showed—For Contract No. 1, 38,980 lbs. per square inch, as compared with specification minimum requirement of 33,000 lbs.; and similarly, for Contract No. 2, 38,880 lbs. per square inch, as compared with specification minimum requirement of 35,000 lbs.

The average elongation of all accepted regular material showed—For Contract No. 1, 28.25 per cent., as compared with specification minimum requirement of 20 per cent.; and for Contract No. 2, 28.30 per cent.; as compared with specification minimum requirement of 22 per cent.

The average reduction of area of all accepted regular material showed—For Contract No. 1, 55 per cent., and for Contract No. 2, 54 per cent., as compared with specification minimum requirement of 44 per cent.

Records of inspection show:

	CONTRACT NO. 1	CONTRACT NO. 2
Heats originally rejected	73	42
Heats on retests rejected	6	5
Heats on retests accepted	35	8

Of the foregoing total rejected heats for Contract No. 1, 61 were rejected on physical tests alone, of which:

57 were submitted by Carnegie Steel Company.

4 were submitted by Pencoyd Iron Works.

13 were rejected on chemical tests alone, of which:

10 were submitted by Carnegie Steel Company.

3 were submitted by Pencoyd Iron Works.

5 were rejected on both physical and chemical tests, all submitted by the Carnegie Steel Company.

Of the total rejected heats for Contract No. 2, 36 were rejected on physical tests alone, of which:

28 were submitted by Carnegie Steel Company.

8 were submitted from Brooklyn Plant Stock.

10 were rejected on chemical tests alone, all submitted by Carnegie Steel Company.

1 submitted by Carnegie Steel Company was rejected on both physical and chemical tests.

The uniformity of the material, both physically and chemically, as indicated by tests and analyses, shows a continued high grade.

The total weight of finished material shipped from the shops since commencing work amounts to 146,684,798 lbs. for Contract No. 1, and 10,283,662 lbs. for Contract No. 2; the weight accepted during 1904 being 34,422,204 lbs. The latter was manufactured at the following shops:

	CONTRACT NO. 1	CONTRACT NO. 2
Pencoyd branch.....	308,171 lbs.	.....
Trenton branch.....	20,008,675 "	1,456,781 lbs.
Athens branch.....	7,027,102 "	380,890 "
Brooklyn branch.....	20,558 "	3,587,835 "
Baltimore Bridge Company.....	.....	1,632,192 "
Totals.....	27,364,506 lbs.	7,057,698 lbs.

The following list shows some of the most important instances of errors in shop work corrected through inspection:

Number of errors in faced length of columns, beams and girders	22
Number of errors in connections of columns, beams and girders	108
Number of pieces cut apart and re-riveted	45
Number of pieces chipped, coped and reamed	385
Number of pieces of finished work re-straightened..	462
Number of pieces scraped and re-painted	10
Number of pieces of finished work finally rejected..	113
Number of holes screw-plugged on account of mis-punching	325
Number of holes changed for field connections....	1,630
Number of holes omitted and drilled later.....	98
Number of connections reset	70
Number of pieces of material omitted by shop	55

A comparison between actual shipped weights and estimated weights of material on all drawings on which work has been finished to date shows:

	CONTRACT NO. 1	CONTRACT NO. 2
Shipped weight of.....	134,885,227 lbs.	6,816,589 lbs.
Estimated weight of.....	134,153,067 "	6,769,429 "

These totals thus indicate an average excess in weight of only .055 of one per cent. for Contract No. 1, and .07 of one per cent. for Contract No. 2, the allowed specification variation being 2.5 per cent. deficiency.

During 1904 cast material furnished consisted of some station columns from the Foran Foundry & Machine Company; pipe and special castings from the Warren Foundry & Machine Company and the Donaldson Company; and segments for the Harlem and East River tunnels from the Davies & Thomas Company, the latter forming the bulk of cast-iron tonnage for the year.

The total weight of cast material accepted and shipped since the beginning of work amounts to 53,417,895 lbs. The weight for Contract No. 1, shipped during 1904, was 2,356,498 lbs., and for Contract No. 2, 17,322,572 lbs., a total of 19,679,070 lbs. In addition, 7,581,484 pounds for Contract No. 2 (not shipped, but in storage at foundry) was accepted, making a total weight of 27,260,554 lbs. This was cast at the following foundries:

	CONTRACT NO. 1	CONTRACT NO. 2
Warren Foundry and Machine Company.	8,370 lbs.	.....
Donaldson Iron Company .....	.....	191,161 lbs.
Foran Foundry and Machine Company ..	549,454 "	501,718 "
Davies & Thomas Company	1,798,674 "	24,211,177 "
Totals	2,356,498 lbs.	24,904,056 lbs.

In addition to the above amount of cast-iron accepted during 1904, 785,356 lbs. were carefully inspected but rejected. No rejections were made on cast material except for defective work.

410 tensile tests were made, showing an average ultimate strength of 22,262 lbs. per square inch—the average specification requirement being 21,000 lbs. per square inch.

534 transverse tests showed under specification conditions, an average sustaining capacity per square inch at moment of rupture of 816 lbs.—the specification requirement being 750 lbs.

Early in the year the Pennsylvania Steel Company, at their Sparrow's Point and Steelton works completed all the tonnage of rail and fittings for Contract No. 1.

Of this class of material there were shipped to date:

Of 100-lb. rails 22,400,000 lbs., No. 1.

Of 100-lb. rails 1,120,167 lbs., No. 2.

During 1904, the quantities were:

Of 100-lb. rails 3,172,832 lbs., No. 1.

Of 100-lb. rails 149,867 lbs., No. 2.

Of splice plates for 100-lb. rails there were shipped to date:

15,039 pairs 850,238 lbs.

During 1904, the quantity was:

2,496 pairs 141,046 lbs.

Total tonnage (long) of No. 1 rails to date, 10,000 tons.

Total tonnage (long) of No. 2 rails to date, 500 $\frac{167}{2240}$ tons.

Surface inspection of rails for 1904 showed the following results, after material had passed required mill inspection of Maryland Steel Company:

Number of rails re-straightened 57

Number of rails cut to shorter lengths 18

Number of rails accepted only as No. 2 quality 21

Number of rails rejected as scrap 4

The total amount of cement shipped since the commencement of work amounts to 393,422,415 lbs., the amount shipped during 1904 being 57,249,395 lbs., the latter being divided as follows:

	CONTRACT NO. 1	CONTRACT NO. 2
148,384 barrels Portland Cement.....	33,419,925 lbs.	22,965,870 lbs.
2,699 barrels Natural Cement.....	809,600 "	54,000 "
Totals.....	34,229,525 lbs.	23,019,870 lbs.

The amount of Portland cement accepted during 1904 is divided as follows:

American Giant	124,515 bbls.
Helderberg	3,415 bbls.
Vulcanite	24,440 bbls.
Total	152,370 bbls.

The average results from complete tests of 77 accepted lots of American Giant, of 1,616 barrels each, show:

FOR NEAT BRIQUETTES	24 HOURS	7 DAYS	28 DAYS
Average results	294 lbs.	700 lbs.	786 lbs..
Specification requirements	150 "	400 "	500 "
FOR SAND BRIQUETTES, 2 TO 1			
Average results .....	....	408 "	509 "
Specification requirements .....	....	200 "	300 "

The average results from complete tests of three accepted lots of Helderberg, of 1,138 bbls. each, show:

FOR NEAT BRIQUETTES	24 HOURS	7 DAYS	28 DAYS
Average results	185 lbs.	635 lbs.	807 lbs.
Specification requirements	150 "	400 "	500 "
FOR SAND BRIQUETTES, 2 TO 1			
Average results .....	....	300 "	438 "
Specification requirements .....	....	200 "	300 "

The average results from complete tests of 10 accepted lots of Vulcanite, of 2,440 barrels each, show:

FOR NEAT BRIQUETTES	24 HOURS	7 DAYS	28 DAYS
Average results	258 lbs.	766 lbs	871 lbs.
Specification requirements	150 "	400 "	500 "
FOR SAND BRIQUETTES, 2 TO 1			
Average results . . . . .	....	411 "	523 "
Specification requirements . . . . .	....	200 "	300 "

Results obtained are shown below, covering percentage of gain, both neat and in sand mixtures, as well as the average results of boiling tests of all accepted Portland cement:

	PER CENT. INCREASE 7 TO 28 DAYS		AVERAGE STRENGTH OF BOILED BRIQUETTES
	NEAT	SAND	
American Giant	12.3	24.8	681 lbs.
Helderberg	27.1	46.0	608 "
Vulcanite	13.7	27.2	781 "

Of Natural Cement, only one lot of 1,445 bbls., was accepted, the average results for complete tests being as follows:

FOR NEAT BRIQUETTES	7 DAYS	28 DAYS
Average results	266 lbs.	360 lbs
Specification requirements.....	125 "	200 "
FOR SAND BRIQUETTES, 2 TO 1		
Average results	232 "	341 "
Specification requirements.....	100 "	150 "

During the year 1904 there have been broken of Neat and Portland cement, 24,521 briquettes. Of these 46 failed.

Of Portland cement with sand, 12,216 briquettes...None failing.

Of Neat Natural cement, 345 briquettes.....None failing.

Of Natural cement with sand, 312 briquettes.....None failing.

Total number of all briquettes, neat.....24,866

Total number of all briquettes, sand.....12,528

Total amount of cement inspected during the year 1904—Portland, 346,780 bbls., of which 152,330 bbls. were accepted, and 146,650 bbls. rejected, while 47,800 bbls. were turned over to the manufacturer on account of high 7-day neat results.

Of Natural cement during the year, 1,445 barrels inspected were accepted.

Portland Cement: Average results of all accepted American Giant tests during year periods:

NEAT.

	1 DAY	7 DAYS	28 DAYS
1900.....	229 lbs.	582 lbs.	714 lbs.
1901.....	300 "	645 "	763 "
1902.....	317 "	703 "	800 "
1903.....	309 "	745 "	854 "
1904.....	294 "	700 "	786 "

SAND 2 TO 1.

	7 DAYS	28 DAYS
1900.....	276 lbs.	434 lbs.
1901.....	380 "	525 "
1902.....	419 "	545 "
1903.....	423 "	529 "
1904.....	408 "	509 "

The total amount of cement inspected during the year for Contract No. 2, all furnished by the Vulcanite Cement Company, amounted to 86,800 bbls., of which 24,400 bbls. were accepted and 62,400 bbls. rejected.

The work accomplished by the chemical laboratory of the department was :

Number of steel analyses made on ladle samples..	24
Number of steel analyses made on finished material	1,121
Number of paint samples analyzed	40
Number of oil samples analyzed	6
Number of asphalt samples analyzed	24
Number of cement samples analyzed	212
Number of special determinations	11
Total	1,438

Work on the tunnel railroad underneath the Hudson river being constructed by the New York and Jersey Railroad Company, has steadily progressed throughout the year.

On March 11 the north heading of the west-bound tube tunnel was driven from the State of New Jersey to a connection with the old shaft and heading constructed about 1880 at the foot of Morton street, near the bulkhead of the Hudson river; 714 feet of 18-ft. diameter iron-tube tunnel having been constructed within the State of New York during 1904. Within this tube there has also been constructed internal concrete lining for track and electric operation for a length of approximately 2,600 feet, completing that portion ready for track laying.

The south heading of the 15¼ ft. diameter east-bound parallel tube has been advanced from the State of New Jersey to within the State of New York, and at the close of the year reached a point under the waters of the Hudson river, 147 feet east of the State line.

The extension of the west-bound track tube, forming part of the New York City approach, has also been advanced from the working shaft on West street near the foot of Morton street eastward into the City of New York.

Permission having been granted, on July 15, by the Rapid Transit Board, the tunnel company proceeded to open the surface

of Morton street west of Greenwich street in order to construct the New York approach on the plans originally approved under its franchise; but this work was suspended on account of the extension of the Company's terminal to Sixth avenue and Thirty-third street. This necessitated lowering the grade of the railroad to pass below future subways built north and south, and therefore the opening above referred to was closed, and the street surface repaved and renewed. The west-bound tunnel was then extended and driven by shield from below the surface eastward under Morton street to and under Greenwich street to a point below the surface of Greenwich street 286 feet north of the northerly line of Morton street, thus making a distance of tube tunnel constructed during 1904 on this approach of 1,021.5 feet.

The following is a résumé of the work done, during 1904, by the Pennsylvania, New York & Long Island Railroad Company. There was acquired, either by purchase or condemnation, nearly all the property necessary for the tunnels, stations, works, and appurtenances of the company.

One of the two large power houses required for generating electricity for the company located in Long Island City is, at this date, about completed.

Contracts were let for the construction of the two tunnels under the North river, and for the land tunnels from the Manhattan shaft at Eleventh avenue and Thirty-second street to the east side of Tenth avenue under Thirty-second street.

A shaft had been sunk on property owned by the Company at Eleventh avenue and Thirty-second street. Rock was blasted westward for a distance of 450 feet in the north tunnel, and 250 feet in the south tunnel, and for a distance of 90 feet in the south half of the twin tunnels eastward from the Manhattan shaft under Thirty-second street to connect with the Terminal.

The installation of extensive construction plant is about completed for the further prosecution of the work.

The Terminal station site has been cleared and a contract entered into for the necessary excavation from the site, and for the construction of retaining walls around it. The contractors began

work promptly and have prosecuted it with vigor. A contract was let for the necessary modifications of the sewer system in the vicinity of the site, and this work is well in hand.

A contract was entered into for the construction of four tunnels from First avenue in the borough of Manhattan to East avenue in Long Island City. The greater part of the work performed under this contract during the year was in connection with the installation of the extensive plants required for the prosecution of the work. One of these is located near the Long Island Railroad Ferry in Long Island City, the other on property owned by the company near Thirty-second street and First avenue in Manhattan. A smaller plant was installed near East and Borden avenues in Long Island City, a working shaft sunk across the four tunnel lines, and headings started westwardly therefrom. On the Manhattan side the excavation for one of the two permanent shafts was nearly completed, and headings started eastward toward the river.

The staff of the Chief Engineer during 1904 was about the same, numerically, as in the two years previous. At the close of the year there were 316 appointments, divided as follows:

Engineers	88
Draughtsmen	25
Rodmen	79
Axemen	19
Inspectors	87
Chemist	1
Secretary	1
Clerks	15
Photographer	1

The following table indicates the additions and other changes in the staff that have taken place during the year:

NAME	TITLE	APPOINTMENT TO PRESENT RANK	CESSATION OF SERVICE	REMARKS
Wm. Barclay Parsons.....	Chief Engineer.....	June 8, 1894..	Dec. 31, 1904..	Resigned.
Edwin H. Thomes.....	Assistant Engineer.....	May 1, 1900..	Oct. 17, " ..	Transferred to Bor. of Queens
Ralph N. Wheeler.....	Assistant Engineer.....	July 1, " ..	Nov. 1, " ..	Resigned.
Henry W. Durham.....	Assistant Engineer.....	July 20, " ..	Oct. 12, " ..	Resigned.
Ernest W. Clarke.....	Assistant Engineer.....	July 30, " ..	Nov. 1, " ..	Resigned.
Wm. E. Swift.....	Assistant Engineer.....	Aug. 6, " ..	Oct. 22, " ..	Resigned.
C. W. Booth, Jr.....	Assistant Engineer.....	Aug. 1, 1903..	Aug. 1, " ..	Resigned.
Albert H. Chandler.....	Assistant Engineer.....	Oct. 20, " ..	Nov. 1, " ..	Resigned.
Franklin S. Storey.....	Assistant Engineer.....	Oct. 20, " ..	Nov. 1, " ..	Transferred to Dept. of Docks.
James J. Blake.....	Assistant Engineer.....	Aug. 13, 1904..	" ..	
James R. Ferris.....	Assistant Engineer.....	Aug. 15, " ..	" ..	
Gerardo Immediato.....	Assistant Engineer.....	Aug. 15, " ..	" ..	
Harry C. Sweeney.....	Assistant Engineer.....	Aug. 15, " ..	" ..	
Albert Goertz.....	Assistant Engineer.....	Aug. 15, " ..	" ..	
John M. Steinmetz.....	Assistant Engineer.....	Aug. 15, " ..	" ..	
James A. Guttridge.....	Assistant Engineer.....	Aug. 16, " ..	" ..	
Edwin L. Sprague.....	Assistant Engineer.....	Aug. 19, " ..	" ..	
Dean C. Warren.....	Assistant Engineer.....	Aug. 24, " ..	" ..	
Joseph L. Hunt.....	Assistant Engineer.....	Sept. 1, " ..	" ..	
Edward Pförtner.....	Assistant Engineer.....	Sept. 1, " ..	" ..	
Benjamin A. Hodgdon.....	Assistant Engineer.....	Oct. 1, " ..	" ..	
Eugene G. Haines.....	Assistant Engineer.....	Oct. 8, " ..	" ..	
David E. Baxter.....	Draughtsman.....	June 5, 1900..	April 1, 1904..	Transferred to Department of Bridges.
George H. Lesley.....	Draughtsman.....	Dec. 1, " ..	Oct. 17, " ..	Transferred to Bor. of Bronx.
Wm. F. Steinmetz.....	Draughtsman.....	Sept. 11, 1902..	April 1, " ..	Transferred to Dept. of Docks.

NAME	TITLE	APPOINTMENT TO PRESENT RANK	CESSATION OF SERVICE	REMARKS
Louis Sonn.....	Draughtsman.....	Oct. 1, 1902..	Aug. 15, 1904..	Transferred to Bor. of Queens.
Wm. A. Roffe.....	Draughtsman.....	Jan. 1, 1904..	July 1, ".....	Promoted from Rodman.
R. F. Knochenhauer.....	Draughtsman.....	Jan. 13, ".....	".....	Promoted from Rodman.
Maurice G. Huerstel.....	Draughtsman.....	Feb. 17, ".....	Aug. 1, 1904..	Resigned.
Julian P. W. Richmond..	Draughtsman.....	Mar. 14, ".....	".....	Reinstated.
Harry D. Appleby.....	Draughtsman.....	June 9, ".....	".....	
Edwin A. Kunze.....	Draughtsman.....	June 9, ".....	".....	
Frank P. Lothrop.....	Draughtsman.....	June 9, ".....	".....	
George M. Sprague.....	Draughtsman.....	June 9, ".....	".....	
Harry M. Taylor.....	Draughtsman.....	June 9, ".....	".....	
Robert A. Winslow.....	Draughtsman.....	July 15, ".....	".....	
Arthur G. Livingston.....	Draughtsman.....	Aug. 1, ".....	Dec. 1, 1904..	Promoted from Rodman.
Samuel Wieder.....	Draughtsman.....	Aug. 3, ".....	".....	Promoted from Rodman.
William G. Golden.....	Draughtsman.....	Dec. 1, ".....	".....	Transferred from Aqueduct Commission.
Macrae Sykes.....	Transitman.....	June 3, ".....	".....	Resigned.
Joseph F. Banks.....	Rodman.....	June 1, 1900..	Oct. 1, 1904..	Resigned.
Martin J. Lyons.....	Rodman.....	June 20, ".....	Sept. 19, ".....	Resigned.
Harold T. Kinch.....	Rodman.....	July 2, ".....	Aug. 1, ".....	Transferred to Dept. of Water Supply.
Stephen E. Meagher.....	Rodman.....	Aug. 1, ".....	Aug. 1, ".....	Transferred to Dept. of Docks.
Henry Brannfuhr.....	Rodman.....	Feb. 5, 1901..	Oct. 19, ".....	Transferred to Bor. of Bronx.
Henry L. Connell.....	Rodman.....	Mar. 1, ".....	Feb. 12, ".....	Transferred to Aqueduct Commission.
Anthony E. Hoffman.....	Rodman.....	Feb. 15, 1902..	Nov. 15, ".....	Transferred to Dept. of Docks.
Michael F. Corkery.....	Rodman.....	Feb. 15, ".....	Jan. 1, ".....	Transferred to Dept. of Water Supply.

NAME	TITLE	APPOINTMENT TO PRESENT RANK	CESSATION OF SERVICE	REMARKS
John F. Mauser, Jr.....	Rodman.....	Feb. 15, 1902	June 20, 1904	Transferred to Bor. of Bronx.
Job C. Austin.....	Rodman.....	Feb. 25, "	Aug. 1, "	Resigned.
Louis Knezek.....	Rodman.....	July 28, "	June 16, "	Resigned.
Hugh F. Bresnan.....	Rodman.....	Mar. 1, 1903	June 16, "	Transferred to Dept. of Bridges.
Peter A. Farrell.....	Rodman.....	Mar. 1, "	Aug. 16, "	Transferred to Dept. of Water Supply.
Herman Schweitzer.....	Rodman.....	Mar. 19, "	Oct. 17, "	Transferred to Bor. of Queens.
Robt. W. Wood.....	Rodman.....	Mar. 30, 1903	Aug. 24, "	Resigned.
Wm. L. Selmer.....	Rodman.....	Apr. 1, "	Oct. 21, "	Transferred to Bor. of Rich- mond.
John C. Weiler.....	Rodman.....	Apr. 1, "	June 20, "	Transferred to Bor. of Bronx.
Clifford G. Baxter.....	Rodman.....	Apr. 16, "	Apr. 10, "	Transferred to Bor. of Rich- mond.
George M. Clark.....	Rodman.....	Apr. 19, "	Aug. 1, "	Transferred to Bor. of Rich- mond.
Abram W. Birmingham..	Rodman.....	June 3, "	June 16, "	Transferred to Dept. of Bridges.
Fred'k F. Decker.....	Rodman.....	June 5, "	June 1, "	Transferred to Bor. of Rich- mond.
John P. Lonergan.....	Rodman.....	Nov. 1, "	Oct. 17, "	Transferred to Bor. of Rich- mond.
Edward H. Hopson.....	Rodman.....	Nov. 19, "	Nov. 27, "	Resigned.
Herbert Spencer.....	Rodman.....	Nov. 19, "	July 16, "	Resigned.
Thomas Coombs.....	Rodman.....	Jan. 27, 1904	Aug. 13, "	Transferred to Bor. of Queens.
Edward H. Muldoon.....	Rodman.....	Mar. 4, "	.....	
George J. Horwedel.....	Rodman.....	Apr. 13, "	.....	
Robert J. Allen.....	Rodman.....	Apr. 14, "	Sept. 11, 1904	Resigned.

NAME	TITLE	APPOINTMENT TO PRESENT RANK	CESSATION OF SERVICE	REMARKS
John F. Perrine.....	Rodman.....	May 2, 1904..	.....	
Leo Feibel.....	Rodman.....	May 11, " "	.....	
Stephen Schmidt.....	Rodman.....	Aug. 1, " "	.....	Promoted from Axeman.
Chas. E. Weber.....	Rodman.....	Aug. 2, " "	.....	
Joseph Brady.....	Rodman.....	Aug. 11, " "	Dec. 5, 1904..	Resigned.
Edward Pendlebury.....	Rodman.....	Aug. 11, " "	.....	Promoted from Axeman.
Harry M. Adams.....	Rodman.....	Aug. 15, " "	.....	
John J. Murphy.....	Rodman.....	Aug. 15, " "	.....	Resigned.
Henry J. Nurick.....	Rodman.....	Aug. 15, " "	Nov. 14, 1904..	Promoted from Axeman.
John O'Rourke.....	Rodman.....	Aug. 15, " "	.....	Promoted from Axeman.
John Wilson.....	Rodman.....	Aug. 15, " "	.....	Promoted from Axeman.
Fred'k P. Volckmann....	Rodman.....	Aug. 16, " "	.....	Promoted from Axeman.
John L. Hogan.....	Rodman.....	Aug. 16, " "	.....	
William Hotter.....	Rodman.....	Aug. 16, " "	.....	
Donald W. Howes.....	Rodman.....	Aug. 16, " "	.....	
Eliot N. Smith.....	Rodman.....	Aug. 17, " "	.....	
Wm. L. Hanavan.....	Rodman.....	Aug. 18, " "	.....	
Kenneth B. Emerson.....	Rodman.....	Aug. 18, " "	.....	
Paul M. Entenmann.....	Rodman.....	Aug. 18, " "	.....	
Charles Gilman.....	Rodman.....	Aug. 18, " "	.....	
John P. Hogan.....	Rodman.....	Aug. 18, " "	.....	
Jos. V. De P. Hogue.....	Rodman.....	Aug. 18, " "	.....	
Guido de Angeles.....	Rodman.....	Aug. 23, " "	.....	
Dean G. Edwards.....	Rodman.....	Aug. 23, " "	.....	
Walter J. Gillen.....	Rodman.....	Aug. 23, " "	.....	
Herbert M. Hale.....	Rodman.....	Aug. 23, " "	.....	
Chas. C. Jabureck.....	Rodman.....	Aug. 23, " "	.....	

NAME	TITLE	APPOINTMENT TO PRESENT RANK	CESSATION OF SERVICE	REMARKS
J. F. Johnson, Jr.	Rodman.	Aug. 23, 1904.	.....	Resigned.
John S. Paul.	Rodman.	Aug. 23,	Dec. 13, 1904.	
John S. Rae.	Rodman.	Aug. 23,	.....	
Raphael J. Smyth.	Rodman.	Aug. 23,	.....	
Wm. P. Valley.	Rodman.	Aug. 23,	.....	
C. M. Pinckney.	Rodman.	Sept. 8,	Nov. 16, 1904.	Resigned.
Thayer Lindsley.	Rodman.	Sept. 15,	.....	
Floyd F. McDowell.	Rodman.	Sept. 23,	.....	Reinstated — Promoted from Axeman.
Michael J. O'Neill.	Rodman.	Oct. 1,	.....	Promoted from Axeman.
Robt. F. Brushaber.	Rodman.	Oct. 1,	.....	Promoted from Axeman.
Elliot F. Soule, Jr.	Rodman.	Oct. 1,	.....	Resigned.
John Wilson.	Rodman.	Oct. 1,	Nov. 20, 1904.	
Eugene F. Clayton.	Rodman.	Oct. 5,	.....	
Benj. F. Underhill.	Rodman.	Oct. 5,	.....	
Wm. A. Evalenko.	Rodman.	Oct. 17,	.....	
Walter McGivney.	Rodman.	Nov. 5,	.....	
Joseph O'Donnell.	Axeman.	Mar. 24, 1903.	May 16, 1904.	Transferred to Dept. of Public Works.
Wm. H. Fletcher.	Axeman.	Apr. 6,	May 9,	Transferred to Dept. of Bridges.
Jeremiah J. Keely.	Axeman.	Apr. 6,	Sept. 12,	Transferred to Dept. of Water Supply.
James P. Hynes.	Axeman.	June 11,	Apr. 1,	Resigned.
Wm. R. Porter.	Axeman.	July 18,	Oct. 1,	Transferred to Bor. of Rich- mond.
Eduardo Breker.	Axeman.	Oct. 5,	Mar. 1,	Transferred to Bor. of Rich- mond.

NAME	TITLE	APPOINTMENT TO PRESENT RANK	CESSATION OF SERVICE	REMARKS
Edmond Ryan.....	Axeman.....	May 7, 1904..	.....	Transferred to Bor. of Rich-
W. L. Bernhardt.....	Axeman.....	May 9, " ..	Aug. 9, 1904..	mond.
Chas. Goodman.....	Axeman.....	May 9, " ..	.....	Resigned.
Alexander J. Patton.....	Rodman.....	May 9, " ..	Nov. 9, 1904..	
Chas. E. Thomson.....	Axeman.....	May 9, " ..	.....	
Chas. J. O'Neill.....	Axeman.....	June 1, " ..	.....	Resigned.
Arthur Avery.....	Axeman.....	June 2, " ..	Oct. 1, 1904..	
Robert A. Serrell.....	Axeman.....	June 2, " ..	.....	
David F. Driscoll.....	Axeman.....	June 3, " ..	.....	
Michael J. McNulty.....	Axeman.....	June 4, " ..	.....	
Otto H. Jaeger.....	Axeman.....	June 6, " ..	.....	
Mark T. Hayes.....	Axeman.....	June 17, " ..	.....	
Louis J. Caemmerer.....	Axeman.....	July 11, " ..	.....	
Joseph Silberstein.....	Axeman.....	Aug. 23, " ..	.....	Transferred to Aqueduct Com-
James L. Davis.....	Inspector of Steel.....	Aug. 29, 1900..	Apr. 1, 1904..	mission.
George Peters.....	Inspector of Steel.....	Nov. 26, " ..	Sept. 5, " ..	Died.
Chas. H. Vansant.....	Inspector of Steel.....	Jan. 28, 1901..	Nov. 1, " ..	Resigned.
Homer A. Reid.....	Inspector of Steel.....	Feb. 25, " ..	Feb. 19, " ..	Resigned.
John Glendinning.....	Inspector of Masonry.....	May 24, 1900..	Nov. 3, " ..	Died.
George C. Densmore.....	Inspector of Masonry.....	Aug. 12, " ..	Dec. 20, " ..	Died.
George C. Abernathy.....	Inspector of Masonry.....	Aug. 27, " ..	Mar. 19, " ..	Resigned.
John Byrne.....	Inspector of Masonry.....	Mar. 21, 1901..	Feb. 29, " ..	Discharged—Lack of Work.
Wm. H. Hanrahan.....	Inspector of Masonry.....	May 8, " ..	Oct. 13, " ..	Discharged—Lack of Work.
Patrick J. Lovely.....	Inspector of Masonry.....	May 8, " ..	Apr. 15, " ..	Transferred to Aqueduct Com-
				mission.

NAME	TITLE	APPOINTMENT TO PRESENT RANK	CESSATION OF SERVICE	REMARKS
Wm. F. Stone.....	Inspector of Masonry.....	June 3, 1901..	Feb. 1, 1904..	Discharged—Lack of Work.
William P. Jewett.....	Inspector of Masonry.....	July 22, ".....	Nov. 19, ".....	Resigned.
Michael Reilly.....	Inspector of Masonry.....	Sept. 3, ".....	Nov. 20, ".....	Discharged—Lack of Work.
Michael Hannigan.....	Inspector of Masonry.....	Sept. 28, ".....	Dec. 17, ".....	Discharged—Lack of Work.
George M. McCloskey.....	Inspector of Masonry.....	Oct. 3, ".....	Apr. 1, ".....	Transferred to Bureau of Buildings, Brooklyn.
Philip Schneider.....	Inspector of Masonry.....	May 14, 1902..	July 6, ".....	Transferred to Bor. of Bronx.
Chas. P. Sample.....	Inspector of Masonry.....	Sept. 2, ".....	Feb. 1, ".....	Discharged—Lack of Work.
Thomas P. Murphy.....	Inspector of Masonry.....	Oct. 6, ".....	Feb. 1, ".....	Discharged—Lack of Work.
William Brooks.....	Inspector of Masonry.....	Oct. 31, ".....	Feb. 1, ".....	Discharged—Lack of Work.
Edward N. Raleigh.....	Inspector of Masonry.....	Nov. 1, ".....	Oct. 24, ".....	Transferred to Bor. of Manhattan.
Timothy Reihan.....	Inspector of Masonry.....	Mar. 31, 1903..	Dec. 26, ".....	Discharged—Lack of Work.
Drew Linard.....	Inspector of Masonry.....	May 7, ".....	Dec. 26, ".....	Discharged—Lack of Work.
Patrick F. Burns.....	Inspector of Masonry.....	July 20, 1903..	Sept. 19, ".....	Discharged—Lack of Work.
Thos. R. Smith.....	Inspector of Masonry.....	Jan. 5, 1904..	May 5, 1904..	Transferred to Dept. of Public Works—Bronx.
John Kelly.....	Stenographer.....	Aug. 6, 1900..	May 1, ".....	Resigned.
George V. Bonhag.....	Stenographer.....	May 9, ".....	.....	Promoted from Office-Boy—Resigned.
Louis J. Madden.....	Junior Clerk.....	June 16, ".....	Oct. 4, 1904..	Promoted from Office-Boy.
Samuel Singer.....	Junior Clerk.....	June 16, ".....	.....	Promoted from Office-Boy.
James J. Boyle.....	Junior Clerk.....	June 16, ".....	.....	Promoted from Office-Boy.
Henry Laut.....	Office Boy.....	Dec. 1, ".....	.....	Promoted from Office-Boy.

The executive staff during the year remained unchanged, comprising the following officers:

George S. Rice	Deputy Chief Engineer.
Albert Carr	Engineer First Division.
Alfred Craven	Engineer Second Division.
C. V. V. Powers	Engineer Third Division.
Eugene Klapp	Engineer Fourth Division.
Robert Ridgway	Engineer Fifth Division.
Calvin W. Hendrick.....	Engineer Sewer Division.
St. John Clarke	General Inspector of Designs.
W. A. Aiken.....	General Inspector of Material.
D. L. Turner.....	Asst.-Engr. in Charge of Stations.
M. J. Farrell.....	Secretary to Chief Engineer.

With this report my functions as Chief Engineer to your Board cease. In conclusion I wish to quote from my letter of resignation, wherein I expressed a sense of my obligation to you, the Board, the Contractors and my staff:

To every member of the Board I am deeply indebted, not only for the official trust, confidence and support to which I have alluded, but to many acts of personal courtesy; and to you especially, Mr. Orr, with whom I naturally have been brought in closer relations, I owe more than is possible in any way to record. I desire to avail of this opportunity to express my appreciation of the manner in which the Construction Company, through its President, Mr. Belmont, and its engineers, have uniformly accepted my plans, and of the way in which the Contractor, Mr. McDonald, and the sub-contractors have heartily co-operated to successfully carry out the work; and, above all, I wish to express my obligations for the faithful, honest, and personally loyal services rendered by the engineering staff.

With an earnest wish for the continued development of the work of creating new facilities for transportation for New York, of which the continued rapid growth of the City demands, and for the success of my successor, I am

Respectfully yours,

WM. BARCLAY PARSONS.

Chief Engineer.

REPORT
OF THE
AUDITOR

THE CITY OF NEW YORK.

BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS.

Auditor's Office, January 1, 1905.

The Honorable Board of Rapid Transit Railroad Commissioners:

GENTLEMEN—I have the honor to submit herewith a report of the Auditor, in relation to the finances of the Board of Rapid Transit Railroad Commissioners, for the period January 1, 1904, to December 31, 1904, giving in general and in detail, viz:—

REQUISITIONS FOR THE GENERAL FUND: (Folio 333) A statement showing the requisitions made upon the Board of Estimate and Apportionment for the authorization for the issue of Revenue Bonds for the requirements of the Board of Rapid Transit Railroad Commissioners, from January 1, 1904, to December 31, 1904.

APPROPRIATIONS FOR THE GENERAL FUND: (Folio 334) A statement showing the Appropriations made by the Board of Estimate and Apportionment for the purposes of the Board of Rapid Transit Railroad Commissioners, from January 1, 1904, to December 31, 1904.

DISBURSEMENTS OF THE GENERAL FUND: Statements showing the Disbursements of the General Fund made under the direction of the Rapid Transit Board, from January 1, 1904, to December 31, 1904, viz.:

Administrative and General Office. (Folio 335)

Engineering. (Folio 336)

Legal—A summary of General Fund Disbursements. (Folios 337, 338)

REQUISITIONS AND APPROPRIATIONS FOR REAL ESTATE, TERMINALS AND EXTRA WORK. MANHATTAN-BRONX CONSTRUCTION: (Folio 339) A statement showing the Requisitions made upon the Board of Estimate and Apportionment for the authorization for the issue of Corporate Stock of the City of New York, and the appropriations made by the said Board

of Estimate and Apportionment, the proceeds thereof to be applied to the requirements for Real Estate, Terminals and Extra Work done, and materials furnished, under provision of the contract with *John B. McDonald, Contractor*, dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.

CORPORATE STOCK OF THE CITY OF NEW YORK. MANHATTAN-BRONX CONSTRUCTION: (Folio 340) A statement showing the issues of Corporate Stock of The City of New York, from January 28, 1904, to January 9, 1905, the proceeds thereof to be applied to the construction of the Manhattan-Bronx Rapid Transit Railroad.

DISBURSEMENTS FOR WORK DONE AND MATERIALS FURNISHED. MANHATTAN-BRONX CONSTRUCTION: (Folio 341) A statement showing the requisitions made upon the Board of Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board, to be made to *John B. McDonald, Contractor*, for work done and materials furnished under contract dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.

DISBURSEMENTS FOR EXTRA WORK DONE (INCLUDING DUCTS) AND MATERIALS FURNISHED. MANHATTAN-BRONX CONSTRUCTION: (Folio 342) A statement showing the requisitions made upon the Board of Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board, to be made to *John B. McDonald, Contractor*, for Extra Work done and materials furnished under contract dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904, pursuant to resolutions adopted by the said Rapid Transit Board, and in accordance with agreements between the Contractor and the City, and the sureties to the said contract of February 21, 1900.

DISBURSEMENTS FOR TERMINALS. MANHATTAN-BRONX CONSTRUCTION: (Folio 343) A statement showing the requisitions made upon the Board of Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board, to be made for Terminals, under provision of the contract with *John B. McDonald, Contractor*, dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.

DISBURSEMENTS FOR REAL ESTATE. MANHATTAN-BRONX CONSTRUCTION: (Folios 344 to 348, inclusive.) A statement showing the payments authorized under the direction of the Board of Rapid Transit Railroad Commissioners, to be made for Real Estate acquired for and in behalf of the City of New York, under provision of the contract with *John B. McDonald, Contractor*, dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.

PAYMENT OF INTEREST ON THE CORPORATE STOCK. MANHATTAN-BRONX CONSTRUCTION: (Folio 349) A statement showing the payments made under the direction of the City Comptroller for Interest due on the Corporate Stock issued by The City of New York for the construction of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.—A summary of the Manhattan-Bronx Construction Fund Disbursements.

CORPORATE STOCK OF THE CITY OF NEW YORK. BROOKLYN-MANHATTAN CONSTRUCTION: (Folio 350) A statement showing the issues of Corporate Stock of The City of New York, from January 25, 1904, to March 17, 1905, the proceeds thereof to be applied to the construction of the Brooklyn-Manhattan Rapid Transit Railroad.

DISBURSEMENTS FOR WORK DONE AND MATERIALS FURNISHED. BROOKLYN-MANHATTAN CONSTRUCTION: (Folio 351) A statement showing the requisitions made upon the Board of

Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board, to be made to *Rapid Transit Subway Construction Company, Contractor*, for work done and materials furnished under contract dated July 21, 1902, for the construction and operation of the Brooklyn-Manhattan Rapid Transit Railroad from January 1, 1904, to December 31, 1904.

DISBURSEMENTS FOR REAL ESTATE. BROOKLYN-MANHATTAN CONSTRUCTION: (Folio 352) A statement showing the payments authorized under the direction of the Board of Rapid Transit Railroad Commissioners, to be made for Real Estate acquired for and in behalf of The City of New York, under provision of the contract with *Rapid Transit Subway Construction Company, Contractor*, dated July 21, 1902, for the construction and operation of the Brooklyn-Manhattan Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.

PAYMENT OF INTEREST ON THE CORPORATE STOCK. BROOKLYN-MANHATTAN CONSTRUCTION: (Folio 353) A statement showing the payments made under the direction of the City Comptroller for Interest due on the Corporate Stock issued by The City of New York, for the construction of the Brooklyn-Manhattan Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.—A summary of Brooklyn-Manhattan Construction Fund Disbursements.

BALANCES: (Folios 354, 355, 356) Statements showing the Yearly Balances of the General Fund, and of the Manhattan-Bronx and the Brooklyn-Manhattan Construction Funds.

SECURITY: (Folios 357 to 361, inclusive.) A transcript of information relative to Securities.

A RECAPITULATION: (Folios 362 to 366, inclusive.)

Respectfully submitted,

H. A. D. HOLLMANN,
Auditor.

GENERAL FUND

REQUISITIONS

Statement of Requisitions made upon the Board of Estimate and Apportionment for the issue of Revenue Bonds for the requirements of the Board of Rapid Transit Railroad Commissioners from January 1, 1904, to December 31, 1904.

[illegible]

GENERAL FUND

DISBURSEMENTS

Statement showing the amount of Disbursements made under the direction of the Board of Rapid Transit Railroad Commissioners from January 1, 1904, to December 31, 1904.

ADMINISTRATIVE AND GENERAL OFFICE

Compensation of Commissioners.....	\$30,000.00
Salaries	7,219.92
Office and Telephone Rentals.....	2,030.90
Stationery, Printing and Supplies.....	4,563.17
Furniture	33.25
Stenography and Typewriting.....	200.90
Postage	92.12
Expenses incurred in connection with the formal opening of the Manhattan-Bronx Rapid Transit Railroad	1,147.20
Commemorative Tablets in the City Hall station of the Manhattan-Bronx Rapid Transit Railroad.....	2,670.38
Model of the Subway (Station at Twenty-eighth Street and Fourth Avenue) for the Louisiana Purchase Exposition held at St. Louis, Mo.....	2,148.49
Additional Work done and Materials furnished in connection with the removal of surface obstructions, reconstruction of areas, and grading of sidewalks, etc., necessary in the location of Kiosks. Manhattan-Bronx Rapid Transit Railroad.....	7,761.53
Sundry Contingent Expenses.....	97.25
Total Amount of Administrative and General Office Disbursements	\$57,965.11

DISBURSEMENTS—Continued
ENGINEERING

Salaries	\$474,761.53
Office and Telephone Rentals.....	18,779.31
Stationery, Printing and Supplies.....	3,236.53
Furniture	1,335.05
Telegraph Service.....	122.51
Locomobile Service.....	240.00
Lighting	211.39
Janitor Service.....	248.00
Engineering Instruments and Supplies.....	5,622.23
Maps, Plans, Prints, and Photographic Supplies.....	2,786.40
Disbursements (Traveling Expenses).....	3,610.19
Stenography and Typewriting.....	8.50
Postage	656.34
Inspections, Tests and Analysis.....	1,357.71
Borings and Soundings.....	2,327.56
Architectural Services and Disbursements.....	11,192.74
Consulting Electrical Engineer's Services.....	2,500.00
Sundry Contingent Expenses.....	1,946.38
Total Amount of Engineering Disbursements.....	\$530,936.37

DISBURSEMENTS—Continued

LEGAL

ADVERTISING.

Notices of Public hearing before Commissioners appointed by the Appellate Division of the Supreme Court, First Judicial Department, to determine whether a railroad ought to be constructed and operated. Modification of Park Avenue Section, Manhattan-Bronx Rapid Transit Railroad..... \$593 25

STENOGRAPHY AND TYPEWRITING.

Services rendered the Commissioners appointed by the Appellate Division of the Supreme Court, First Judicial Department, to determine whether a railroad ought to be constructed and operated. Modification of Park Avenue Section, Manhattan-Bronx Rapid Transit Railroad..... 1,661 65

REAL ESTATE SEARCH.

Fees for Searches for owners of Real Estate, etc., along Park Avenue, between Thirty-second and Forty-second Streets, Borough of Manhattan, N. Y..... \$200 00
 Fees for Searches for owners of Real Estate, etc., on Flatbush and Ocean Avenues, Borough of Brooklyn, N. Y..... 350 00
 Fees for Searches for owners of Real Estate, etc., at Worth and Elm Streets, Spring and Elm Streets, Bleecker and Elm Streets, Fourteenth Street and Fourth Avenue, Seventeenth, Eighteenth and Nineteenth Streets and Fourth Avenue, Twenty-third Street and Fourth Avenue, Twenty-eighth Street and Fourth Avenue, Thirty-second and Thirty-third Streets and Fourth Avenue, and at Fiftieth Street and Broadway, Borough of Manhattan, N. Y..... 49 50

Amount carried forward..... \$2,854 40

DISBURSEMENTS—Continued

LEGAL—Continued

Amount brought forward.....		\$2,854 40
COUNSEL.		
Fees.....	\$20,000 00	
Disbursements, viz.:		
Stenography and Typewriting.....	\$474 25	
Printing.....	1,031 77	
Sundry Contingent Expenses.....	349 30	
	<u>1,855 32</u>	
Fees and Disbursements of Special Counsel.....		21,855 32
		<u>2,037 15</u>
EXPENSES.		
Sundry Contingent Expenses.....		100 00
Total Amount of Legal Disbursements.....		<u>\$27,446 87</u>

GENERAL FUND

SUMMARY OF DISBURSEMENTS

January 1, 1904, to December 31, 1904.

Administrative and General Office.....	\$57,965 11
Engineering.....	530,936 37
Legal.....	<u>27,446 87</u>
Total Amount of General Fund Disbursements.....	<u>\$616,348 35</u>

MANHATTAN-BRONX CONSTRUCTION FUND—REAL ESTATE, TERMINALS AND
EXTRA WORK

REQUISITIONS AND APPROPRIATIONS

Statement of Requisitions made upon the Board of Estimate and Apportionment, for the authorization for the issue of Corporate Stock of The City of New York and the Appropriations made by the said Board of Estimate and Apportionment, the proceeds thereof to be applied to the requirements for Real Estate, Terminals and Extra Work done and materials furnished under provision of the contract with John B. McDonald, Contractor, dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.

No.	Authorized	Amount	Appropriation	Amount
3	January 28, 1904, as stated on page 2520 of the minutes of the Rapid Transit Board, viz.: For Real Estate.....\$500,000 00 For Terminals.....750,000 00 For Extra Work and Ducts.....1,500,000 00	\$2,750,000 00	February 5, 1904, as stated on page 117 of the minutes of the Board of Estimate and Apportionment.....	\$2,750,000 00
4	December 15, 1904, as stated on page 3003 of the minutes of the Rapid Transit Board, viz.: For Real Estate.....	1,000,000 00	December 16, 1904, as stated on page 2457 of the minutes of the Board of Estimate and Apportionment.....	1,000,000 00
Total amount of Requisitions made upon the Board of Estimate and Apportionment for the requirements for Real Estate, Terminals and Extra Work, from January 1, 1904, to December 31, 1904.....		\$3,750,000 00	Total amount of Appropriations made by the Board of Estimate and Apportionment, the proceeds to be applied to the requirements for Real Estate, Terminals and Extra Work, from January 1, 1904, to December 31, 1904.....	\$3,750,000 00

MANHATTAN-BRONX CONSTRUCTION FUND CORPORATE STOCK

Statement showing the issue of Corporate Stock of The City of New York, from January 28, 1904, to January 9, 1905, the proceeds thereof to be applied to the construction of the Manhattan-Bronx Rapid Transit Railroad.

No.	Date of Sale.	Issue.	Interest Rate.	Maturity.	ISSUE OF STOCK.						Amount of Proceeds Credited.
					Date.	Rate of Premium.	Amount Issued.	Total.	Amount of Premium.	Total.	
*20	1904 May 3	\$4,000,000 00	3½%	May 1 1954	1904 May 4	1.23% .88% Averaged rate .939914893%	\$1,000,000 00 1,000,000 00 2,000,000 00	 \$2,000,000 00	\$12,300 00 8,800 00 \$21,100 00	 (Actual) \$18,798 29	 \$2,018,798 29
					May 5	.7913% Averaged rate .939914893%	 2,000,000 00	 2,000,000 00	\$15,826 00 \$24,054 00	 (Applied) 24,054 00	 2,018,798 29
†21	Nov. 23	\$1,885,000 00	3½%	Nov. 1 1954	Nov. 29 1905	2.4054% 2.4054%	\$1,000,000 00 885,000 00 \$1,000,000 00	 \$1,000,000 00	\$21,287 79 \$21,287 79	 21,287 79	 1,024,054 00
					Jan. 9		 885,000 00	 885,000 00	 \$21,287 79	 21,287 79	 906,287 79
Total Amount of Corporate Stock issued.....											\$5,885,000 00
Total Amount of Premium on the issue of Corporate Stock.....											\$82,938 37
Total Amount of Proceeds applicable to the construction of the Manhattan-Bronx Rapid Transit Railroad of The City of New York, from January 1, 1904, to January 9, 1905.....											\$5,967,938 37

*The Bond sale of May 3, 1905, amounting to \$4,700,000 00, included \$700,000 00 stock issued, the proceeds to be applied toward the construction of the Brooklyn-Manhattan Rapid Transit Railroad, and the premiums received thereon averaged and apportioned as follows—
Total amount of Bonds sold..... \$4,700,000 00
Amount to be applied to Manhattan-Bronx Construction..... \$4,000,000 00
Amount to be applied to Brooklyn-Manhattan Construction..... 700,000 00
Total amount of premiums received on the issue of..... \$4,700,000 00.

Averaged rate and amount of premiums as applied on the Bonds issued for Manhattan-Bronx Construction .939914893% ..\$37,586 58
Averaged rate and amount of premiums as applied on the Bonds issued for Brooklyn-Manhattan Construction..... .939914893% ..6,579 42
†The Bond sale of November 23, 1904, amounting to \$2,250,000 00, included \$365,000 00 stock issued, the proceeds to be applied toward the construction of the Brooklyn-Manhattan Rapid Transit Railroad.

MANHATTAN-BRONX CONSTRUCTION FUND

DISBURSEMENTS

Statement showing the Requisitions made upon the Board of Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board, to be made to *John B. McDonald, Contractor*, for work done and material furnished under contract dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad of The City of New York, from January 1, 1904, to December 31, 1904.

Requisition	To Date	Payments Authorized	To Whom	Amount
42.....	1904 To January 31	As stated on page 2525 of the minutes of the Rapid Transit Commission...	John B. McDonald, Contractor...	\$300,000 00
43.....	February 29	As stated on page 2534 of said minutes	"	395,000 00
44.....	March 31	" " " 2610	"	263,000 00
45.....	April 30	" " " 2667	"	468,000 00
46.....	May 31	" " " 2706	"	574,000 00
47.....	June 30	" " " 2785	"	291,000 00
48.....	July 31	" " " 2799	"	336,000 00
49.....	August 31	" " " 2837	"	208,000 00
50.....	September 30	" " " 2850	"	122,000 00
51.....	October 31	" " " 2911	"	103,000 00
52.....	November 30	" " " 2963	"	92,000 00
53.....	December 31	" " " 3068	"	68,000 00
Total amount paid to <i>John B. McDonald, Contractor</i> , for work done and materials furnished under contract dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.....				
				\$3,220,000 00

DISBURSEMENTS—Continued

EXTRA WORK, INCLUDING DUCTS

Statement showing the Requisitions made upon the Board of Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board to be made to *John B. McDonald, Contractor*, for extra work done and materials furnished under contract dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad of The City of New York, from January 1, 1904, to December 31, 1904, pursuant to resolutions adopted by the Rapid Transit Board, and in accordance with agreements between the Contractor and the City, and the sureties to the said contract of February 21, 1900.

Requisition	To Date	Payments Authorized	To Whom	Amount
	1904			
28.....	To January 31	As stated on page 2526 of the minutes of the Rapid Transit Commission.....	John B. McDonald, Contractor...	\$122,914 50
29.....	February 11	As stated on page 2555 of said minutes..	"	82,795 00
30.....	March 10	" " 2611	"	136,295 00
31.....	April 14	" " 2668	"	132,753 50
32.....	May 9	" " 2707	"	106,959 25
33.....	June 14	" " 2786	"	45,202 23
34.....	July 11	" " 2800	"	59,958 00
35.....	August 31	" " 2838	"	21,198 75
36.....	September 15	" " 2851	"	18,782 00
42nd Street..	October 13	"	"	40,000 00
Water Main	October 17	" 2878	"	30,911 50
37.....	November 31	" " 2912	"	18,782 50
38.....	December 15	" " 2964	"	169,012 61
5 Ducts.....	October 31	" " 3005	"	
39.....	December 31	" " 3070	"	6,285 00
Total amount paid to <i>John B. McDonald, Contractor</i> , for extra work done and materials furnished under contract dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad from January 1, 1904, to December 31, 1904.....				\$991,729 86

DISBURSEMENTS—Continued

TERMINALS

Statement showing the Requisitions made upon the Board of Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board, to be made for Terminals, under provision of the contract with *John B. McDonald, Contractor*, dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.

DISBURSEMENTS	AMOUNT
REAL ESTATE	
Fee paid the <i>Title Guarantee and Trust Company</i> for examination of title and issuing Policy No. 174,655, dated December 23, 1903, for title insurance to the blocks of ground bounded by One Hundred and Forty-eighth Street, Lenox Avenue, Exterior Street, One Hundred and Fiftieth Street, and Seventh Avenue, in the Borough of Manhattan, N. Y., acquired by deed of conveyance to The City of New York from the Rapid Transit Subway Construction Company, dated December 18, 1903.....	\$1,116 31
CONSTRUCTION	
Payment made to <i>John B. McDonald, Contractor</i> , for work done and materials furnished to the first day of March, 1904, being the balance of the total amount (\$1,750,000) allowed under the contract of February 21, 1900, to be paid the contractor for Terminals (payment authorized April 14, 1904, as stated on page 2612 of the minutes of the Rapid Transit Commission).....	\$700,631 97
Total amount paid for Terminals, under provision of the contract with <i>John B. McDonald, Contractor</i> , dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.....	\$701,748 28

DISBURSEMENTS—Continued

REAL ESTATE

Statements showing the requisitions made upon the Board of Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board, to be made for Real Estate acquired, for and in behalf of The City of New York, under provision of the contract with John B. McDonald, Contractor, dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.

DISBURSEMENTS.	AMOUNT.	TOTAL.
ADVERTISING.		
Advertising public notices in the matter of the application and petition of the Board of Rapid Transit Railroad Commissioners, for the appointment of Commissioners of Appraisal by the Supreme Court, First Judicial Department, relative to acquiring real property, rights, franchises, easements, or privileges, situated, viz.: Estate in fee:—Lands in the block bounded by Bergen Avenue, Gerard Street, East One Hundred and Forty-ninth Street, Brook Avenue, and Westchester Avenue, in the Borough of the Bronx, N. Y.	\$645 60	
Easements:—Lands on the westerly side of Fourth Avenue, between Eighth and Ninth Streets, in the Borough of Manhattan, N. Y.	397 80	\$1,043 40
*Advertising public notices in the matter of the application and petition of the Board of Rapid Transit Railroad Commissioners, for the appointment of Commissioners by the Supreme Court, First Judicial Department, to determine whether a railroad ought to be constructed and operated. Westchester Avenue extension (connection at One Hundred and Forty-ninth Street, in the Borough of the Bronx, N. Y., between the Westchester Avenue line of the Rapid Transit Road and the elevated road of the Manhattan Railway Company, and by elevated structure along Westchester Avenue, from Brook Avenue to Third Avenue)		3,094 35
*Advertising notices of public hearing before the Commissioners appointed by the Supreme Court, First Judicial Department, to determine whether a railroad ought to be constructed and operated (Westchester Avenue extension)		483 00
Advertising public notices of the filing for confirmation reports of the Commissioners of Appraisal appointed by the Supreme Court, First Judicial Department, relative to lands situated, viz.: Easements:—In Broadway, between One Hundred and Twenty-second and One Hundred and Thirty-fifth Streets, in the Borough of Manhattan, N. Y.	\$166 80	
Estate in fee:—In the block bounded by Bergen Avenue, Gerard Street, East One Hundred and Forty-ninth Street, Brook Avenue, and Westchester Avenue, in the Borough of the Bronx, N. Y.	178 80	345 60
Amount carried forward.....		\$4,966 35

REAL ESTATE—Continued

DISBURSEMENTS.		AMOUNT.	TOTAL.
Amount brought forward.....			\$4,966 35
CLERICAL SERVICE.			
Stenographic services rendered the Commissioners of Appraisal appointed by the Supreme Court, First Judicial Department, relative to lands situated, viz.:			
Easements:—In Broadway, between One Hundred and Twenty-second and One Hundred and Thirty-fifth Streets, in the Borough of Manhattan, N. Y.		\$481 80	
Easements:—On the Westerly side of Fourth Avenue, between Eighth and Ninth Streets, in the Borough of Manhattan, N. Y.		36 00	
*Stenographic services rendered the Commissioners appointed by the Supreme Court, First Judicial Department, to determine whether a railroad ought to be constructed and operated (Westchester Avenue extension).....		23 20	541 00
The City of New York—Reimbursement of a fund for expenses of Commissioners of Estimate and Appraisal for Clerks, etc.; services rendered the Commissioners of Appraisal appointed by the Supreme Court, First Judicial Department, relative to lands situated, viz.:			
Estate in fee:—On the Northeast corner of Worth and Elm Streets, in the Borough of Manhattan, N. Y.		\$358 74	
Estate in fee:—In the block bounded by Bergen Avenue, Gerard Street, East One Hundred and Forty-ninth Street, Brook Avenue, and Westchester Avenue, in the Borough of the Bronx, N. Y.		837 85	1,196 59
Compensation of Clerk to the Commissioners of Appraisal appointed by the Supreme Court, First Judicial Department, relative to lands (easements) in Broadway, between One Hundred and Twenty-second and One Hundred and Thirty-fifth Streets, in the Borough of Manhattan, N. Y.			1,200 00
For preparing and furnishing maps to the Commissioners of Appraisal appointed by the Supreme Court, First Judicial Department, relative to lands (easements) situated on the westerly side of Fourth Avenue, between Eighth and Ninth Streets, in the Borough of Manhattan, N. Y.			50 00
*For searches made for the names of Real Estate owners along Westchester Avenue, from Brook Avenue to Third Avenue, in the Borough of the Bronx, N. Y. (Westchester Avenue extension).....			125 00
Amount carried forward.....			\$8,078 94

REAL ESTATE—Continued

DISBURSEMENTS.		AMOUNT.	TOTAL.
Amount brought forward.....			\$8,078 94
EXPERT SERVICE.			
Compensation of Experts in the matter of testimony before Commissioners of Appraisal appointed by the Supreme Court, First Judicial Department, relative to lands situated, viz.:			
Estate in fee:—On the northeast corner of Worth and Elm Streets, in the Borough of Manhattan, N. Y.		\$500 00	
Easements:—On the Western side of Fourth Avenue, between Eighth and Ninth Streets, in the Borough of Manhattan, N. Y.		3,425 00	
Estate in fee:—In the Block bounded by Bergen Avenue, Gerard Street, East One Hundred and Forty-ninth Street, Brook Avenue, and Westchester Avenue, in the Borough of the Bronx, N. Y.		625 00	4,550 00
COMMISSIONERS OF APPRAISAL, ET AL.			
Compensation for Commissioners of Appraisal appointed by the Supreme Court, First Judicial Department, relative to acquiring lands situated, viz.:			
Estate in fee:—On the northeast corner of Worth and Elm Streets, in the Borough of Manhattan, N. Y.		\$600 00	
Estate in fee:—In the Block bounded by Bergen Avenue, Gerard Street, East One Hundred and Forty-ninth Street, Brook Avenue, and Westchester Avenue, in the Borough of the Bronx, N. Y.		1,640 00	
*Compensation for Commissioners appointed by the Supreme Court, First Judicial Department, to determine whether a railroad ought to be constructed and operated (Westchester Avenue extension).....		750 00	2,990 00
REAL ESTATE.			
Rights, Privileges, etc.—Brooklyn Bridge Terminal, viz.: Compensation to Messrs. Luyties Brothers, in the acquirement of Vault rights and privileges, in the construction of an approach from the Brooklyn Bridge to the Rapid Transit station, situated in Park Row, in the Borough of Manhattan, N. Y., Payment made under the direction of the Rapid Transit Board.....			500 00
Amount carried forward.....			\$16,118 94

REAL ESTATE—Continued

DISBURSEMENTS.	AMOUNT.	TOTAL.
Amount brought forward.....		\$16,118 94
REAL ESTATE—CONTINUED.		
Easement Property, northeast corner of Broadway and Forty-second Street, viz., Awards, Rentals and other expenditures made in the acquirement of easement property in perpetuity, pursuant to the reports of the Commissioners of Appraisal appointed by the Supreme Court, First Judicial Department, relative to lands situated on the northeast corner of Broadway and Forty-second Street, in the Borough of Manhattan, N. Y., dated respectively May 15, 1903, and June 23, 1903, and confirmed by orders of said Supreme Court, dated May 18, 1903, and June 25, 1903.	\$66,414 06	
Payments made under the direction of the Rapid Transit Board.....		
Rebatement of Rentals, transmitted to the City Comptroller.....	22,456 58	43,957 48
Easement Properties and Estates in fee, One Hundred and Forty-ninth Street and Harlem River, One Hundred and Forty-second Street and Lenox Avenue, One Hundred and Fourth Street and Broadway, Hillside and Eleventh Avenues, and at Elm and Worth Streets, in the Boroughs of the Bronx and Manhattan, N. Y., to be acquired in perpetuity in accordance with an agreement between the Interborough Rapid Transit Company and the Board of Rapid Transit Railroad Commissioners for and in behalf of the City of New York, pursuant to a resolution of the said Rapid Transit Board adopted June 25, 1903. Additional payment made upon account of the price of said properties.....		300,000 00
Easement Properties, Broadway, between One Hundred and Twenty-second and One Hundred and Thirty-fifth Streets, viz., Awards made in the acquirement of easement properties in perpetuity, pursuant to the first report of the Commissioners of Appraisal appointed by the Supreme Court, First Judicial Department, relative to lands situated on Broadway, between One Hundred and Twenty-second and One Hundred and Thirty-fifth Streets, in the Borough of Manhattan, N. Y., dated July 15, 1904, and confirmed by order of said Supreme Court, dated November 23, 1904. Payments made under the direction of the Rapid Transit Board. . .		283,513 84
Amount carried forward.....		\$643,590 26

REAL ESTATE—Continued

DISBURSEMENTS.	AMOUNT.	TOTAL.
Amount brought forward.....		\$643,590 26
REAL ESTATE—CONTINUED.		
Estate in fee, northeast corner of Worth and Elm Streets, viz., Awards made in the acquirement of an estate in fee simple, pursuant to the report of the Commissioners of Appraisal appointed by the Supreme Court, First Judicial Department, relative to lands situated on the northeast corner of Worth and Elm Streets, in the Borough of Manhattan, N. Y., dated September 23, 1904, and confirmed by order of said Supreme Court dated December 7, 1904. Payments made under the direction of the Rapid Transit Board.....		22,066 65
Estates in fee, Bergen Avenue, Gerard Street, East One Hundred and Forty-ninth Street, Brook Avenue, and Westchester Avenue, viz., Awards made in the acquirement of estates in fee simple, pursuant to the report of the Commissioners of Appraisal appointed by the Supreme Court, First Judicial Department, relative to lands situated in the Block bounded by Bergen Avenue, Gerard Street, East One Hundred and Forty-ninth Street, Brook Avenue, and Westchester Avenue, in the Borough of the Bronx, N. Y., dated June 14, 1904, and confirmed by order of the said Supreme Court, dated December 2, 1904. Payments made under the direction of the said Rapid Transit Board..... Rebate of proceeds of the sale of old buildings removed; transmitted to the City Comptroller.....	\$195,338 71 700 00	194,538 71
Estate in fee, Hillside Avenue and Ellwood Street, in the Borough of the Bronx, N. Y., acquired by deed of conveyance to The City of New York, from William F. Donnelly, dated November 19, 1904, and recorded in the office of the Register of the County of New York December 1, 1904, in Section 8, Liber 18, page 270 of Conveyances, said deed being in the custody of the City Comptroller. Payment made under the direction of the Rapid Transit Board.....		3,000 00

Total amount paid for Real Estate acquired under provision of the contract with John B. McDonald, Contractor, dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.....

\$863,195 62

*Chargeable to the Construction Fund, pursuant to an agreement with the Interborough Rapid Transit Company dated July 16, 1903.

DISBURSEMENTS—Continued

INTEREST ON CORPORATE STOCK

Statement showing the payments made under the direction of the City Comptroller, for interest due on the Corporate Stock issued by The City of New York, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.

No.	For What	Due	Amount
8	The payment of interest due on the Corporate Stock issued by The City of New York, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad.	May 1, 1904.	\$605,641 23
9	The payment of interest due on the Corporate Stock issued by The City of New York, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad.	November 1, 1904	700,224 55
	Total amount in interest paid on the Corporate Stock issued by The City of New York, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad from January 1, 1904, to December 31, 1904.		\$1,305,865 78

MANHATTAN-BRONX CONSTRUCTION FUND

SUMMARY OF DISBURSEMENTS

For work done and materials furnished, pursuant to contract dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.	\$3,220,000 00
For extra work done and materials furnished (including ducts) pursuant to agreement for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.	991,729 86
For terminals, under provision of the contract dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.	701,748 28
For Real Estate acquired under the provision of the contract dated February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.	\$63,195 62
For interest due on Corporate Stock issued by The City of New York, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.	1,305,865 78
Total amount of Manhattan-Bronx Construction Fund disbursements from January 1, 1904, to December 31, 1904.	\$7,082,539 54

BROOKLYN-MANHATTAN CONSTRUCTION FUND CORPORATE STOCK

Statement showing the issue of Corporate Stock of The City of New York, from January 25, 1904, to March 17, 1905, the proceeds thereof to be applied to the construction of the Brooklyn-Manhattan Rapid Transit Railroad.

No.	Date of Sale.	Issue.	Interest Rate.	Maturity.	Date.	ISSUE OF STOCK.				Total.	Amount of Premium.	Total.	Amount of Proceeds Credited.
						Rate of Premium.	Amount Issued.	Total.	Amount of Premium.				
*3	1904 May 3	\$700,000 00	3½%	May 1 1954	1904 May 4	1.05% 1% Averaged rate .939914893%	\$500,000 00 200,000 00		\$5,250 00 2,000 00				
†4	Nov. 23	365,000 00	3½%	Nov. 1 1954	1905 Mar. 17	2.4054%	365,000 00	\$700,000 00 365,000 00	\$7,250 00 (Actual) \$8,779 71	\$6,579 42 (Applied)		\$706,579 42	
Total Amount of Corporate Stock issued.										8,779 71		373,779 71	
Total Amount of Premium on the issue of Corporate Stock.										\$15,359 13			
Total Amount of Proceeds applicable to the construction of the Brooklyn-Manhattan Rapid Transit Railroad of The City of New York, from January 25, 1904, to March 17, 1905.										\$1,080,359 13			

*The bond sale of May 3, 1904, amounting to \$4,700,000 00, included \$4,000,000 00 stock issued, the proceeds to be applied toward the construction of the Manhattan-Bronx Rapid Transit Railroad and the premiums received thereon averaged and apportioned as follows:—

Total amount of Bonds sold.	\$4,700,000 00
Amount to be applied to Brooklyn-Manhattan Construction.	\$700,000 00
Amount to be applied to Manhattan-Bronx Construction.	4,000,000 00
Total amount of premiums received on the issue of.	\$4,700,000 00
Averaged rate and amount of premiums as applied on the Bonds issued for Brooklyn-Manhattan Construction.	\$44,176 00
Averaged rate and amount of premiums as applied on the Bonds issued for Manhattan-Bronx Construction.	939914893%
The Bond sale of November 23, 1904, amounting to \$2,250,000 00, included \$1,885,000 00 stock issued, the proceeds to be applied toward the construction of the Manhattan-Bronx Rapid Transit Railroad.	939914893%
	\$6,579 42
	37,596 58

BROOKLYN-MANHATTAN CONSTRUCTION FUND

DISBURSEMENTS

Statement showing the Requisitions made upon the Board of Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board, to be made to *Rapid Transit Subway Construction Company, Contractor*, for work done and materials furnished under contract dated July 21, 1902, for the construction and operation of the Brooklyn-Manhattan Rapid Transit Railroad of The City of New York, from January 1, 1904, to December 31, 1904.

Requisition	To Date	Payments Authorized	To Whom	Amount
4.....	1904 To January 31	11 As stated on page 2527 of the minutes of the Rapid Transit Commission...	Rapid Transit Subway Construction Co.	\$30,677 84
5.....	February 29	10 As stated on page 2556 of said minutes	"	36,994 16
6.....	March 31	28 " " 2645	"	38,401 20
7.....	April 30	12 " " 2674	"	44,915 56
8.....	May 31	16 " " 2740	"	56,115 88
9.....	June 30	14 " " 2788	"	61,018 98
10.....	July 31	11 " " 2802	"	51,942 37
11.....	August 31	13 " " 2849	"	60,771 20
12.....	September 30	20 " " 2871	"	64,785 28
13.....	October 31	17 " " 2914	"	61,125 81
14.....	November 30	15 " " 2966	"	59,776 10
15.....	December 31	18 " " 3079	"	53,901 24
Total amount paid to Rapid Transit Subway Construction Company, for work done and materials furnished under contract dated July 21, 1902, for the construction and operation of the Brooklyn-Manhattan Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.				\$620,425 62

DISBURSEMENTS—Continued

REAL ESTATE

Statement showing the Requisitions made upon the Board of Rapid Transit Railroad Commissioners, and the payments authorized under the direction of the said Rapid Transit Board, to be made for Real Estate acquired, for and in behalf of The City of New York, under provision of the contract with *Rapid Transit Subway Construction Company, Contractor*, dated July 21, 1902, for the construction and operation of the Brooklyn-Manhattan Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.

YEAR	DISBURSEMENTS	AMOUNT
1904	CLERICAL SERVICE. Compensation of Clerk to the Commissioners of Appraisal appointed by the Supreme Court, Second Judicial District, relative to acquiring a perpetual underground right, easement, and right of way under Joralemon and other streets in the Borough of Brooklyn, N. Y.....	\$1,200 00
Total amount paid for Real Estate acquired under provision of the contract with <i>Rapid Transit Subway Construction Company, Contractor</i> , dated July 21, 1902, for the construction and operation of the Brooklyn-Manhattan Rapid Transit Railroad, from January 1, 1904, to December 31, 1904		\$1,200 00

DISBURSEMENTS—Continued

INTEREST ON CORPORATE STOCK

Statement showing the payments made under the direction of the City Comptroller, for interest due on the Corporate Stock issued by The City of New York, for the construction and operation of the Brooklyn-Manhattan Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.

No.	For What	Due	Amount
2	The payment of interest due on the Corporate Stock issued by The City of New York, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad.	May 1, 1904.	\$2,816 25
3	The payment of interest due on the Corporate Stock issued by The City of New York, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad.	Nov. 1, 1904.	17,380 15
	Total amount in interest paid on the Corporate Stock issued by The City of New York, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad from January 1, 1904, to December 31, 1904.		\$20,196 40

BROOKLYN-MANHATTAN CONSTRUCTION FUND

SUMMARY OF DISBURSEMENTS

For work done and materials furnished pursuant to contract dated July 21, 1902, for the construction and operation of the Brooklyn-Manhattan Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.	\$620,425 62
For Real Estate acquired under provision of the contract dated July 21, 1902, for the construction and operation of the Brooklyn-Manhattan Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.	1,200 00
For interest due on Corporate Stock issued by The City of New York, for the construction and operation of the Brooklyn-Manhattan Rapid Transit Railroad, from January 1, 1904, to December 31, 1904.	20,196 40
Total amount of Brooklyn-Manhattan Construction Fund disbursements from January 1, 1904, to December 31, 1904.	\$641,822 02

GENERAL FUND BALANCES

Statement showing the yearly balances of the General Fund, 1903-1904.

Year	Appropriations		Disbursements	Excess Dis- bursements chargeable to the unexpended balance of previous appropriations	Surplus applic- able with the current appropriation
1903	\$52,846 45	UNEXPENDED BALANCE, 1903. Unexpended Balance of the General Fund, December 31, 1903. ....	.....	.....	\$52,846 45
1904	576,000 00	APPROPRIATIONS, 1904. Appropriations made by the Board of Estimate and Apportion- ment for the purposes of the Board of Rapid Transit Railroad Commissioners, from January 1, 1904, to December 31, 1904.			
1904	.....	DISBURSEMENTS, 1904. Administrative and General Office \$57,965 11 Engineering 530,936 37 Legal 27,446 87	\$616,348 35	\$40,348 35	.....
		UNEXPENDED BALANCE, 1904. Unexpended Balance of the General Fund, December 31, 1904.	12,498 10	12,498 10	.....
	\$628,846 45		\$628,846 45	\$52,846 45	\$52,846 45

MANHATTAN-BRONX CONSTRUCTION FUND

BALANCES

Statement showing the yearly balances of the Manhattan-Bronx Construction Fund, 1903-1904.

Year	Amount of Proceeds of Corporate Stock Issued.		Disbursements	Excess Disburse- ments charge- able to the cur- rent Stock Issue	Surplus applic- able with the proceeds of the current Stock Issue
1903	\$1,026,200 75	UNEXPENDED BALANCE, 1903. Unexpended Balance of the Manhattan-Bronx Construction Fund, December 31, 1903.....			\$1,026,200 75
1904	5,967,938 37	CORPORATE STOCK, 1904. Amount of Proceeds of Corporate Stock issued by the City of New York for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, from January 28, 1904, to January 9, 1905			
1904		DISBURSEMENTS, 1904. Disbursements, viz.: Manhattan-Bronx Rapid Transit Railroad: For Work done and materials furnished..... \$3,220,000 00 For Extra Work done and materials furnished.. 991,729 86 For Terminals..... 701,748 28 For Real Estate..... 863,195 62 For Interest on the Corporate Stock..... 1,305,865 78			
		EXCESS DISBURSEMENTS, 1904. Excess Disbursements of the Manhattan-Bronx Construction Fund to December 31, 1904, chargeable to the proceeds of the issue of Corporate Stock of April 26, 1905.....	\$7,082,539 54	\$1,114,601 17	
	88,400 42				88,400 42
	\$7,082,539 54		\$7,082,539 54	\$1,114,601 17	\$1,114,601 17

BROOKLYN-MANHATTAN CONSTRUCTION FUND BALANCES

Statement showing the yearly balances of the Brooklyn-Manhattan Construction Fund, 1903-1904.

Year	Amount of Proceeds of Corporate Stock Issued		Disbursements	Surplus applic- able with the proceeds of the current Stock Issue
1903	\$98,545 56	UNEXPENDED BALANCE, 1903. Unexpended Balance of the Brooklyn-Manhattan Construction Fund, Dec. 31, 1903.		\$98,545 56
1904	1,080,359 13	CORPORATE STOCK, 1904. Amount of Proceeds of Corporate Stock issued by the City of New York for the con- struction and operation of the Brooklyn-Manhattan Rapid Transit Railroad, January 25, 1904, to March 17, 1905.....		
1904		DISBURSEMENTS, 1904. Disbursements, viz., Brooklyn-Manhattan Rapid Transit Railroad: For Work done and materials furnished..... \$620,425 62 For Real Estate..... 1,200 00 For Interest on the Corporate Stock..... 20,196 40	\$641,822 02	438,537 11
		UNEXPENDED BALANCE, 1904. Unexpended Balance of the Brooklyn-Manhattan Construction Fund, Dec. 31, 1904.	537,082 67	
	\$1,178,904 69		\$1,178,904 69	\$537,082 67

MANHATTAN-BRONX CONTRACT.

SECURITY.

Statement of Security deposited by *John B. McDonald, Contractor, Rapid Transit Subway Construction Company, and Interborough Rapid Transit Company*, under provision of the contract of February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad, remaining in the custody of The City of New York, December 31, 1904.

Amount in Cash. For Construction pursuant to the Contract, deposited with the City Chamberlain February 24, 1900..... \$1,000,000.

Bond. For Construction and Equipment, deposited with the City Comptroller February 21, 1900.... \$5,000,000.

SURETIES

The Rapid Transit Subway Construction Company of New York,	The United States Fidelity and Guaranty Company of Maryland,	The City Trust, Safe Deposit and Surety Co. of Philadelphia, Pa.,
\$4,000,000.	\$250,000.	\$250,000.

The American Surety
Company of New York,
\$250,000.

The National Surety
Company of New York,
\$250,000.

Bond (continuing). For Rental and also for Construction deposited (substituted) with the City Comptroller January 14, 1904..... \$1,000,000.

SURETIES

Fidelity and Deposit
Company of Maryland,
\$500,000.

United States Fidelity
and Guaranty Com-
pany of Maryland,
\$500,000.

Amount in Securities, deposited with the City Comptroller January 1, 1901 (including supplementary securities deposited September 24, 1902, and securities substituted January 25, 1904). Security for Construction and Equipment..... \$1,000,000.

BROOKLYN-MANHATTAN CONTRACT.

SECURITY.

Statement of Security deposited by *Rapid Transit Subway Construction Company, Contractor*, under provision of the contract of July 21, 1902, for the construction and operation of the Brooklyn-Manhattan Rapid Transit Railroad, remaining in the custody of The City of New York, December 31, 1904.

Amount in Cash. For Construction pursuant to the Contract, deposited with the City Chamberlain
September 11, 1902..... \$1,000,000.

Amount in Securities. A continuing deposit of Securities in lieu of cash, for Rental and also for Construction, deposited with the City Comptroller
September 15, 1902..... \$1,000,000.

SECURITIES.

Statement of the Securities deposited by the *Rapid Transit Subway Construction Company*, January 1, 1901, under the provision of the contract of February 21, 1900, for the construction and operation of the Manhattan-Bronx Rapid Transit Railroad (including supplementary securities deposited September 24, 1902, and securities substituted January 25, 1904.), as security for Construction and Equipment, remaining in the custody of The Comptroller of The City of New York, December 31, 1904.

BONDS AND STOCK REGISTERED IN THE NAME OF "THE COMPTROLLER OF THE CITY OF NEW YORK, IN TRUST AS SECURITY FOR JOHN B. McDONALD, RAPID TRANSIT RAILROAD CONSTRUCTOR."

- \$30,000 3% Additional Water Stock of The City of New York.
Principal payable October 1, 1905.
Interest payable April 1 and October 1.
- 20,000 3% Consolidated Stock of The City of New York for acquiring lands for Mulberry Bend Park.
Principal payable November 1, 1924.
Interest payable May 1 and November 1.
- 50,000 3% Dock Bonds of The City of New York.
Principal payable November 1, 1925.
Interest payable May 1 and November 1.
- 15,000 3½% Consolidated Stock of The City of New York for the New East River Bridge.
Principal payable November 1, 1918.
Interest payable May 1 and November 1.
- 30,000 3½% Corporate Stock of The City of New York for the New Aqueduct.
Principal payable October 1, 1919.
Interest payable April 1 and October 1.
- 25,000 3½% Corporate Stock of the City of New York for School Houses and Sites therefor in the Boroughs of Manhattan and the Bronx.
Principal payable November 1, 1940.
Interest payable May 1 and November 1.

\$170,000. *Amount carried forward.*

SECURITIES.—Continued.

\$170,000 *Amount brought forward.*

- 100,000 3½% Corporate Stock of The City of New York for the Uses and Purposes of the Department of Docks and Ferries.
Principal payable November 1, 1928.
Interest payable May 1 and November 1.
- 237,000 3½% Corporate Stock of The City of New York for the Construction of the Rapid Transit Railroad.
Principal payable November 1, 1950.
Interest payable May 1 and November 1.
- *30,000 3½% Corporate Stock of The City of New York for the repaving of streets.
Principal payable November 1, 1940.
Interest payable May 1 and November 1.
- †200,000 3% Dock Bonds of The City of New York.
Principal payable November 1, 1924.
Interest payable May 1 and November 1.
- †100,000 3% Dock Bonds of The City of New York.
Principal payable November 1, 1914.
Interest payable May 1 and November 1.
- †100,000 3% School House Bonds of The City of New York.
Principal payable November 1, 1908.
Interest payable May 1 and November 1.
- †100,000 3% Additional Water Stock of The City of New York.
Principal payable October 1, 1907.
Interest payable April 1 and October 1.

\$1,037,000.

*Deposited September 24, 1902.

†Substituted January 25, 1904.

SECURITIES.

Statement of Securities deposited with the Comptroller of The City of New York, by *The Rapid Transit Subway Construction Company*, as continuing deposit of Securities in lieu of the deposit of One Million Dollars in cash, in accordance with the contract of July 21, 1902, for the construction and operation of the Brooklyn-Manhattan Rapid Transit Railroad, remaining in the custody of City Comptroller December 31, 1904.

BONDS AND STOCK REGISTERED IN THE NAME OF "THE COMPTROLLER OF THE CITY OF NEW YORK, IN TRUST AS SECURITY FOR THE RAPID TRANSIT SUBWAY CONSTRUCTION COMPANY, BROOKLYN-MANHATTAN RAPID TRANSIT RAILROAD CONSTRUCTORS."

- \$200,000 3½% Corporate Stock of The City of New York for New East River Bridge. Gold. Tax Exempt. Registered.
Principal payable November 1, 1929.
Interest payable May 1 and November 1.
- 200,000 3½% Corporate Stock of The City of New York for Docks and Ferries. Gold. Tax Exempt. Registered.
Principal payable November 1, 1929.
Interest payable May 1 and November 1.
- 200,000 3½% Consolidated Stock of The City of New York for Redemption of Bonds and Stock maturing in the year 1896. Gold. Tax Exempt. Registered.
Principal payable November 1, 1922.
Interest payable May 1 and November 1.
- 200,000 3% Additional Water Stock of The City of New York. Gold. Tax Exempt. Registered.
Principal payable October 1, 1905.
Interest payable April 1 and October 1.
- 142,000 3% Additional Water Stock of The City of New York. Gold. Tax Exempt. Registered.
Principal payable October 1, 1907.
Interest payable April 1 and October 1.
- 58,000 3% Consolidated Stock of The City of New York, for Bridge over Harlem River. Gold. Tax Exempt. Registered.
Principal November 1, 1907.
Interest payable May 1 and November 1.

\$1,000,000.

RECAPITULATION

BOARD OF RAPID TRANSIT RAILROAD COMMISSIONERS
GENERAL FUND, 1894-1904

REQUISITIONS AND APPROPRIATIONS

Total amount of Requisitions made upon the Board of Estimate and Apportionment for the purposes of the Board of Rapid Transit Railroad Commissioners during the period of:—		Total amount of Appropriations made by the Board of Estimate and Apportionment for the purposes of the Board of Rapid Transit Railroad Commissioners during the period of:—	
1894. Amount of Requisitions	\$5,000 00	1894. Amount of Appropriations	\$5,000 00
1895. " " "		1895. " " "	53,795 88
Aggregate appropriation made by the Board of Estimate and Apportionment in excess of the amount of the original requisitions.			
1896. Amount of Requisitions	91,251 06	1896. " " "	102,135 60
1897. " " "	66,947 93	1897. " " "	66,009 59
Aggregate appropriation made by the Board of Estimate and Apportionment reduced to suffice the purposes of the original requisitions			
1898. Amount of Requisitions	80,049 17	1898. " " "	53,380 91
Aggregate appropriation made by the Board of Estimate and Apportionment reduced to suffice the purposes of the original requisitions			
1899. Amount of Requisitions	37,073 82	1899. " " "	27,625 33
1900. " " "	27,625 33	1900. " " "	246,393 28
1901. " " "	246,393 28	1901. " " "	423,521 60
1902. " " "	423,521 60	1902. " " "	613,500 00
1903. " " "	613,500 00	1903. " " "	542,000 00
Re-appropriation. No bonds to be issued		1904. " " "	576,000 00
1904. Amount of Requisitions	542,000 00	Total Amount of Appropriations to the	
Total amount of Requisitions made upon the Board of Estimate and Apportionment from 1894 to 1904, inclusive.	\$2,709,362 19	General Fund from 1894 to 1904, inclusive.	\$2,709,362 19

GENERAL FUND, 1894-1904
DISBURSEMENTS

Total amount of Disbursements made under the direction of the Board of Rapid Transit Railroad Commissioners during the period of:—

	Administrative and General Office	Engineering	Legal	Total
..1894. Amount of Disbursements.....	\$2,929 10	\$1,271 34	\$28 30	\$4,228 74
..1895. " "	6,048 49	26,250 29	25,688 13	57,986 91
..1896. " "	35,572 34	17,028 82	31,457 53	84,058 69
..1897. " "	5,230 06	21,395 86	38,925 73	65,551 65
..1898. " "	4,521 15	17,930 31	29,519 13	51,970 59
..1899. " "	2,826 94	3,698 00	20,551 30	27,076 24
..1900. " "	53,866 33	161,047 23	27,356 19	242,269 75
..1901. " "	39,023 86	348,238 30	31,861 62	419,143 78
..1902. " "	45,576 10	458,389 79	33,547 26	537,513 15
..1903. " "	45,719 42	520,664 27	24,332 55	590,716 24
..1904. " "	57,965 11	530,936 37	27,446 87	616,348 35
	\$299,278 90	\$2,106,870 58	\$290,714 61	

Total amount of General Fund Disbursements, from 1894 to 1904, inclusive.....\$2,696,864 09

CORPORATE STOCK

1894-1904.

MANHATTAN-BRONX CONSTRUCTION FUND

Total amount of Proceeds credited of the Corporate Stock issued by The City of New York for the construction of the Manhattan-Bronx Rapid Transit Railroad during the period of:—

			Proceeds
1900.	Amount of Stock issued...	\$1,000,000 00	
	" " Premium.....	105,400 00	
			\$1,105,400 00
1901.	Amount of Stock issued...	\$11,000,000 00	
	" " Premium.....	635,361 46	
			11,635,361 46
1902.	Amount of Stock issued...	\$12,500,000 00	
	" " Premium.....	803,663 70	
			13,303,663 70
1903.	Amount of Stock issued...	\$11,865,000 00	
	" " Premium.....	237,487 72	
			12,102,487 72
1904.	Amount of Stock issued...	\$5,885,000 00	
	" " Premium.....	82,938 37	
			5,967,938 37

Total amount of Proceeds applicable to the construction of the Manhattan-Bronx Rapid Transit Railroad, from 1900 to 1904, inclusive.....

\$44,114,851 25

BROOKLYN-MANHATTAN CONSTRUCTION FUND

Total amount of Proceeds credited of the Corporate Stock issued by The City of New York for the construction of the Brooklyn-Manhattan Rapid Transit Railroad during the period of:—

1903.	Amount of Stock issued...	\$301,000 00	
	" " Premium.....	715 29	
			\$301,715 29
1904.	Amount of Stock issued...	\$1,065,000 00	
	" " Premium.....	15,359 13	
			1,080,359 13

Total amount of Proceeds applicable to the construction of the Brooklyn-Manhattan Rapid Transit Railroad from 1902 to 1904, inclusive.....

\$1,382,074 42

CONSTRUCTION FUNDS, 1894-1904

DISBURSEMENTS

MANHATTAN-BRONX CONSTRUCTION FUND

Total amount of Disbursements made in the construction of the Manhattan-Bronx Rapid Transit Railroad during the period:—

	Work and Materials	Extra Work and Materials	Terminals	Real Estate	Interest on Corporate Stock	Total
1900. Amt. of Disbursements	\$1,685,000 00					\$1,685,000 00
1901. " "	10,343,000 00	\$162,000 00		\$9,515 45	\$165,013 90	10,679,529 35
1902. " "	11,436,000 00	631,000 00		141,391 72	547,931 41	12,755,423 13
1903. " "	6,930,000 00	2,563,021 47	\$1,048,251 72	512,004 90	947,481 56	12,000,759 65
1904. " "	3,220,000 00	991,729 86	701,748 28	863,195 62	1,305,865 78	7,082,539 54
	\$33,614,000 00	\$4,347,751 33	\$1,750,000 00	\$1,526,107 69	\$2,965,392 65	
Total amount of Manhattan Bronx-Construction Fund Disbursements from 1900 to 1904, inclusive.....						\$44,203,251 67

BROOKLYN-MANHATTAN CONSTRUCTION FUND

Total amount of disbursements made in the construction of the Brooklyn-Manhattan Rapid Transit Railroad during the period:—

	Work and Materials	Real Estate	Interest on Corporate Stock	Total
1903. Amount of Disbursements.....	\$202,457 06	\$706 80	\$5 87	\$203,169 73
1904. " "	620,425 62	1,200 00	20,196 40	641,822 02
	\$822,882 68	\$1,906 80		
Total amount of Brooklyn-Manhattan Construction Fund Disbursements from 1902 to 1904, inclusive..			\$20,202 27	\$844,991 75

Board of Rapid Transit Railroad Commissioners**THE CITY OF NEW YORK****SUMMARY OF DISBURSEMENTS**

1894-1904

Total amount of General Fund Disbursements.....	\$2,696,864.09
Total amount of Manhattan-Bronx Construction Fund Dis- bursements	44,203,251.67
Total amount of Brooklyn-Manhattan Construction Fund Dis- bursements	<u>844,991.75</u>
Total amount disbursed by the Board of Rapid Transit Rail- road Commissioners, from June 18, 1894, to December 31, 1904	<u><u>\$47,745,107.51</u></u>

FINALE.

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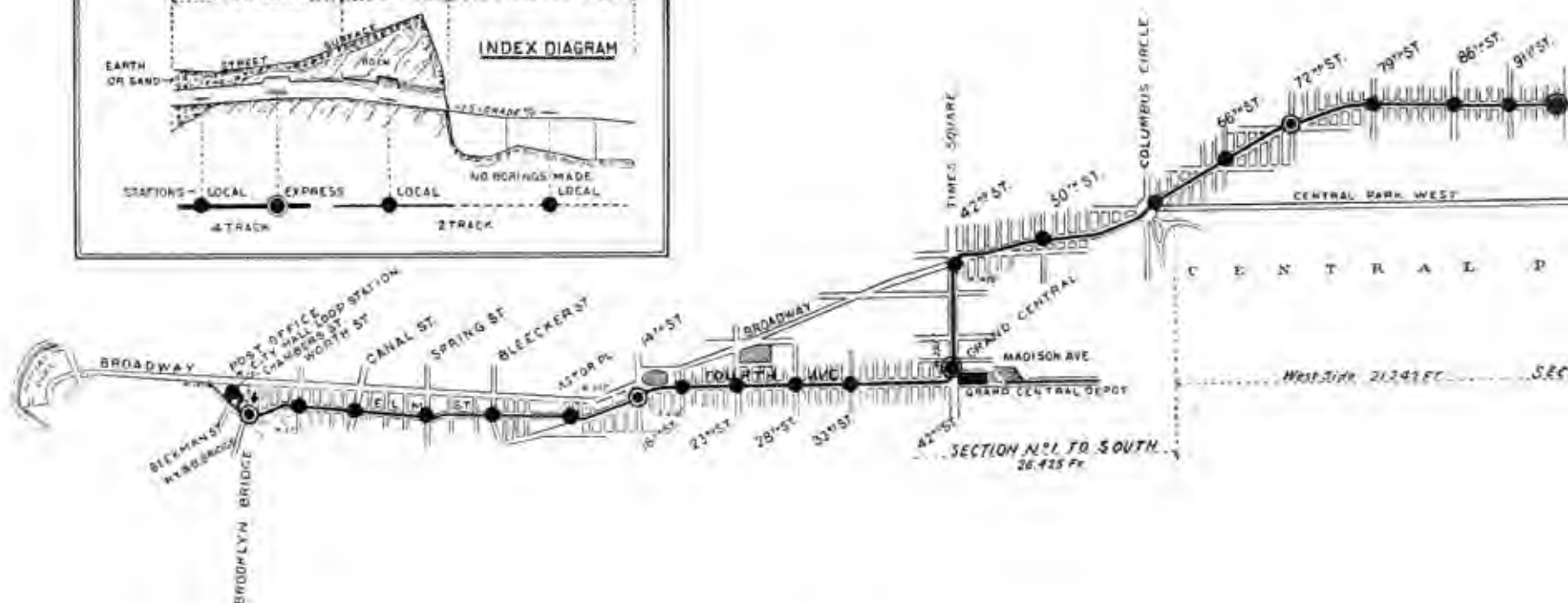
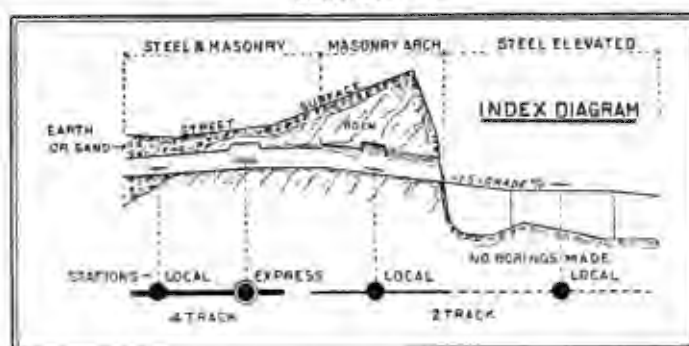
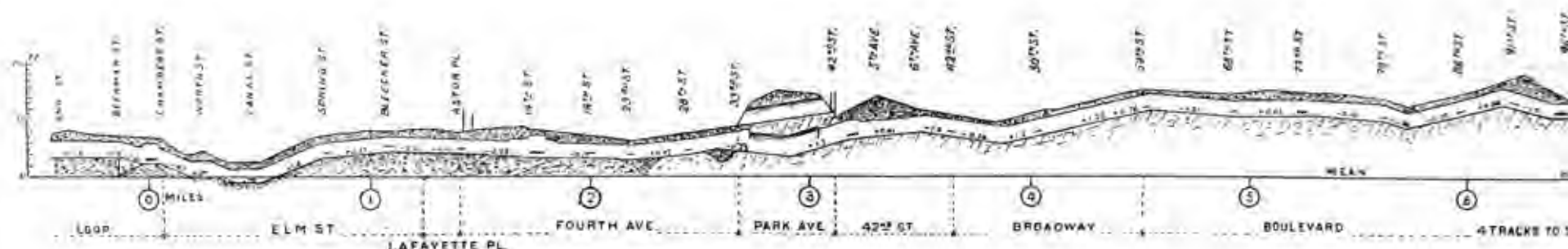
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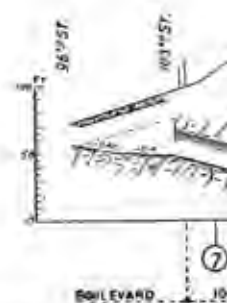
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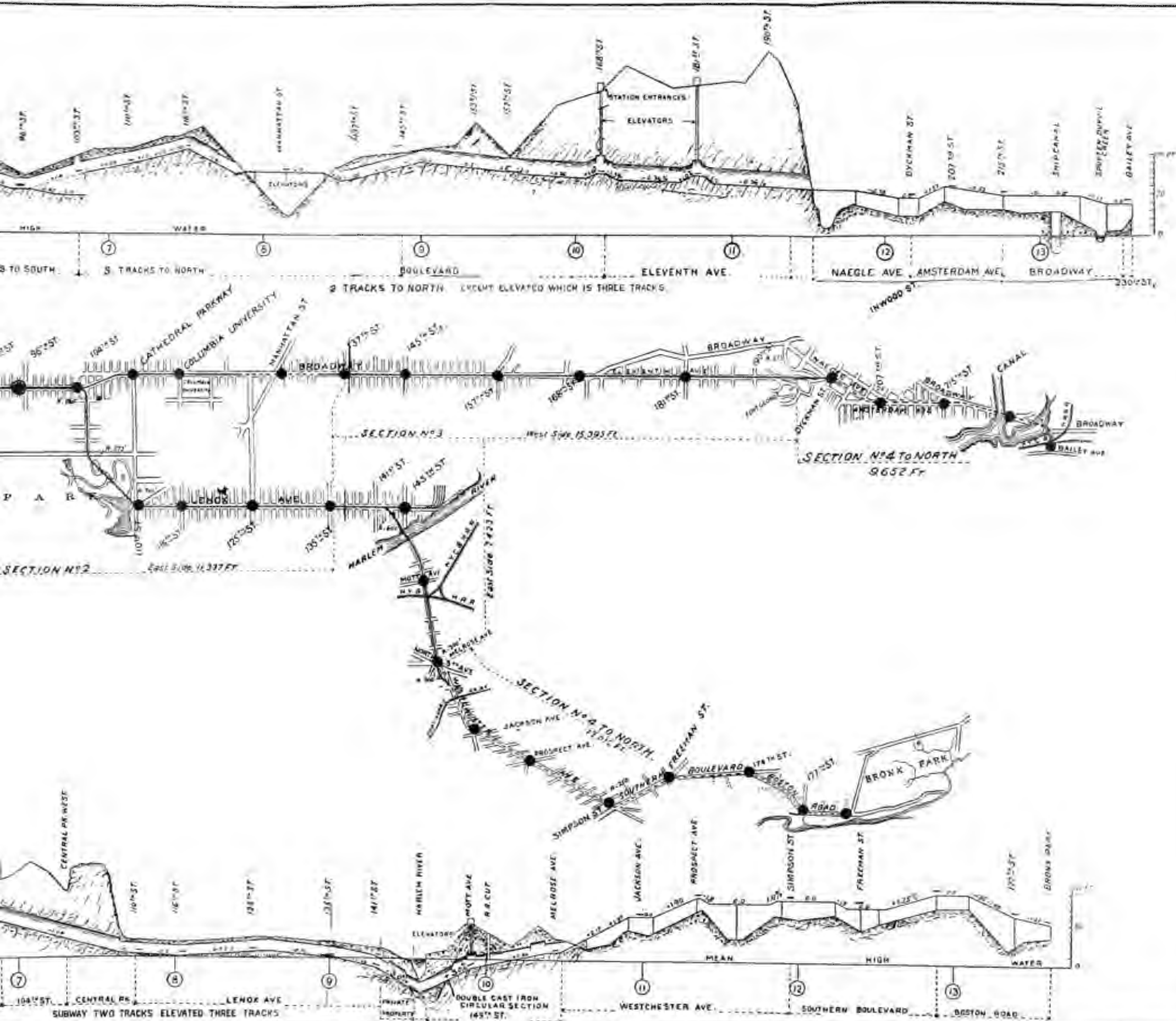
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DATED APRIL 7th 1898.

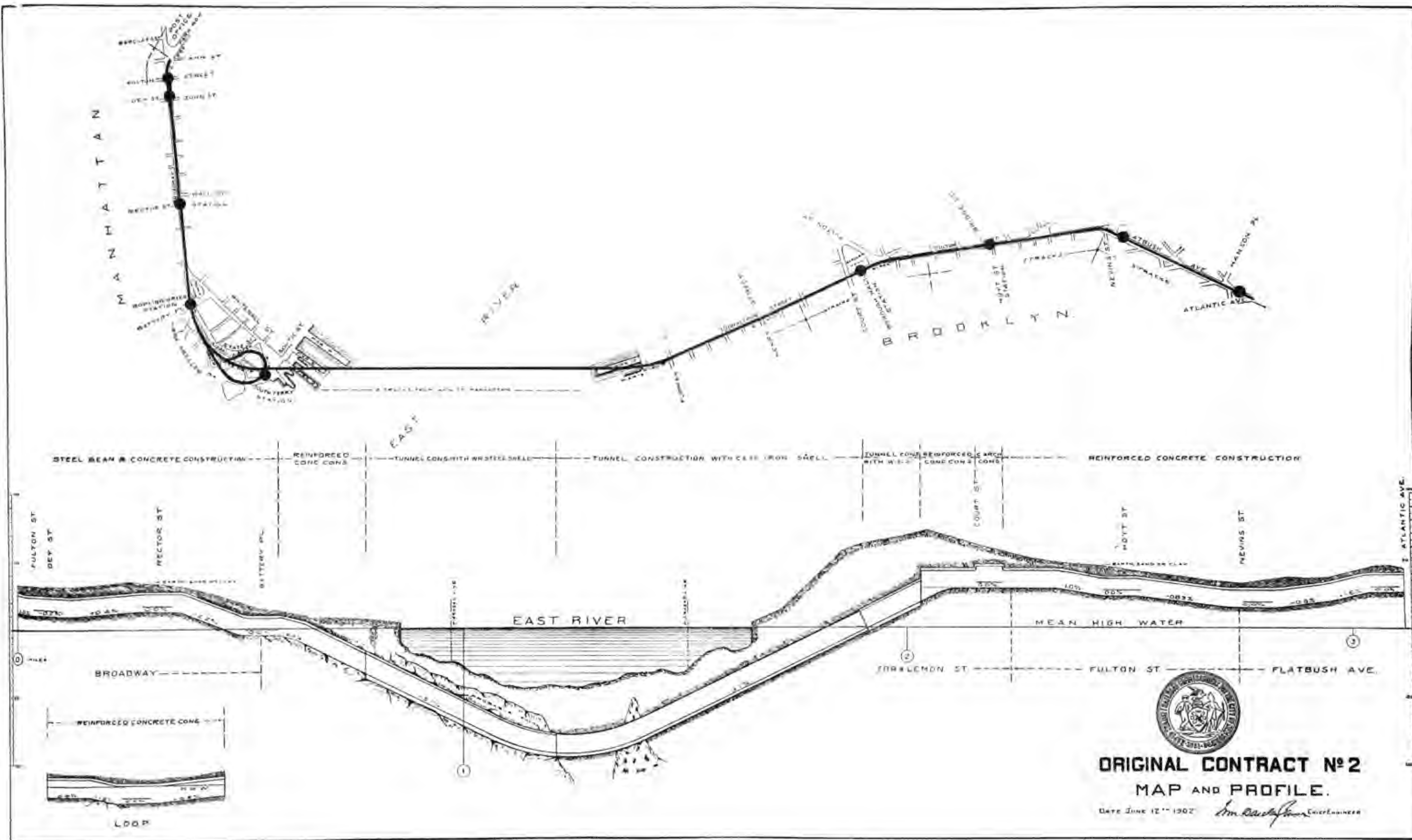
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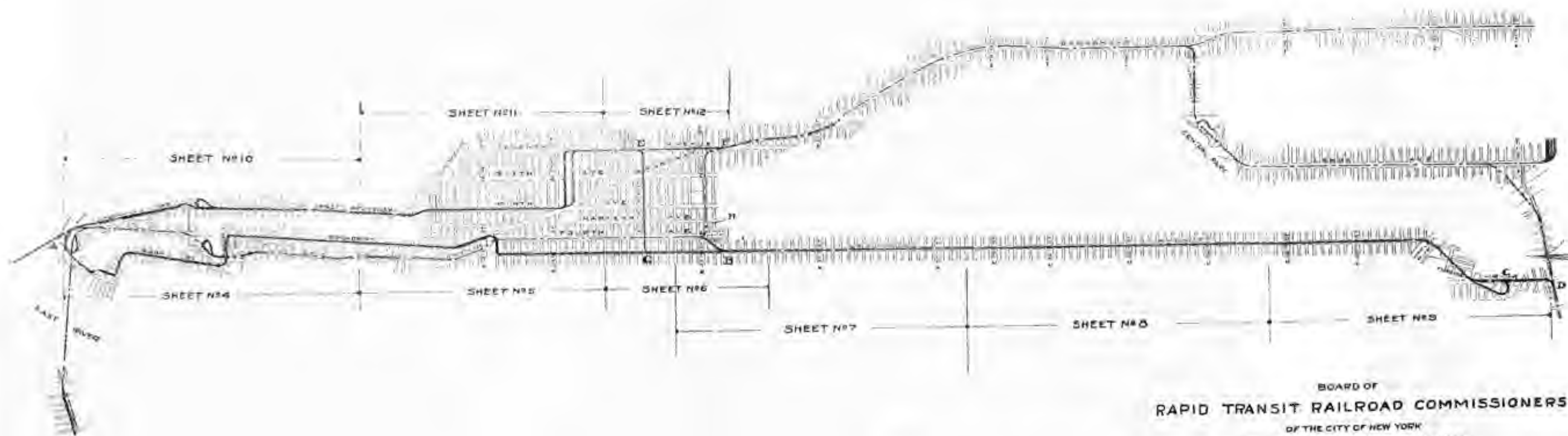


John B. Thompson Chief Engineer.









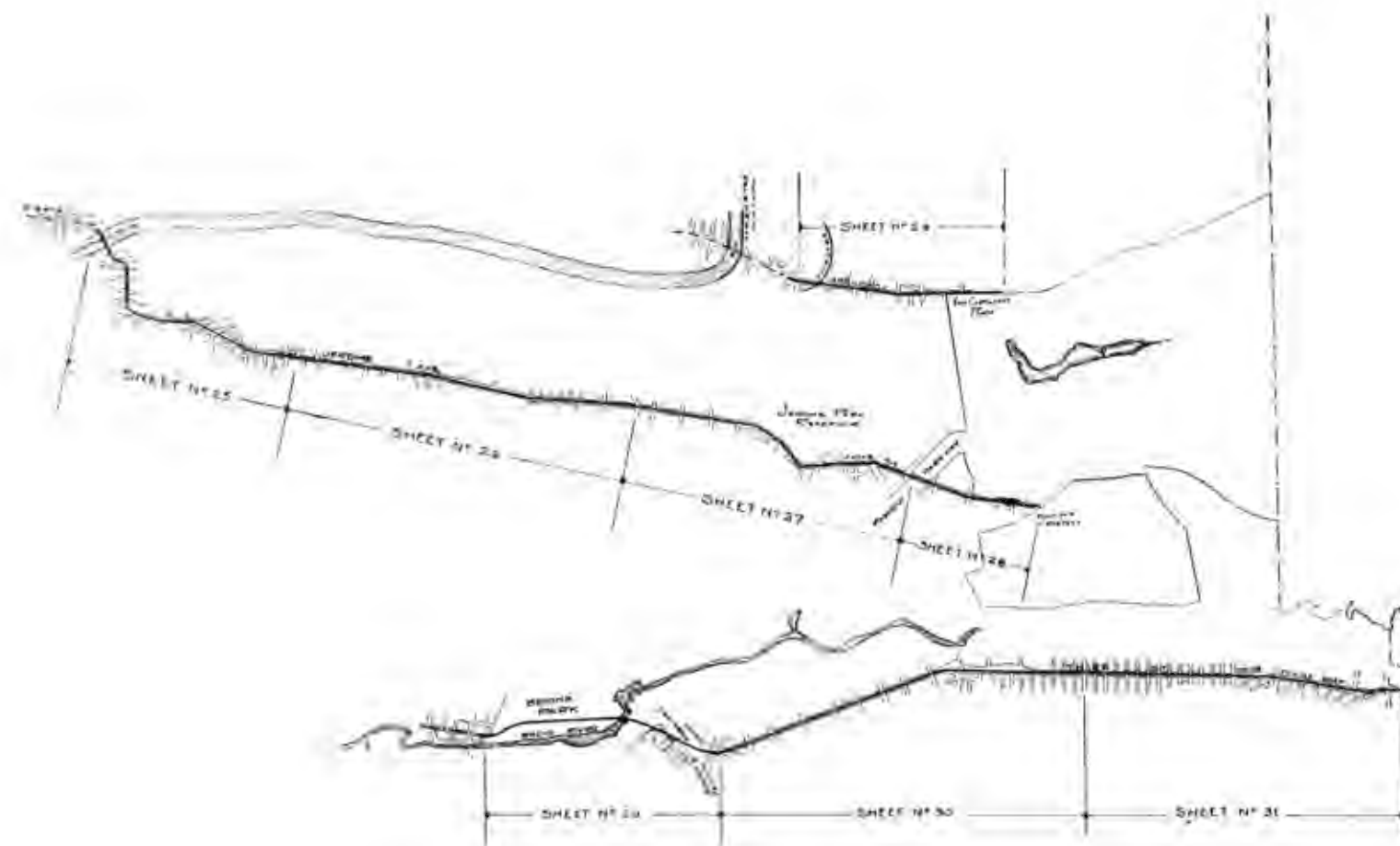
Note: ——— Present Lines.
 ——— Proposed Lines.

BOARD OF
 RAPID TRANSIT RAILROAD COMMISSIONERS
 OF THE CITY OF NEW YORK
 ROUTES AND GENERAL PLAN
 ADOPTED BY RESOLUTION
 KEY MAP - BOROUGH OF MANHATTAN

John Banting Pearson
 CHIEF ENGINEER

SCALE 1500 FT. = 1 IN.
 Dec. 29, 1904

SHEET N°1



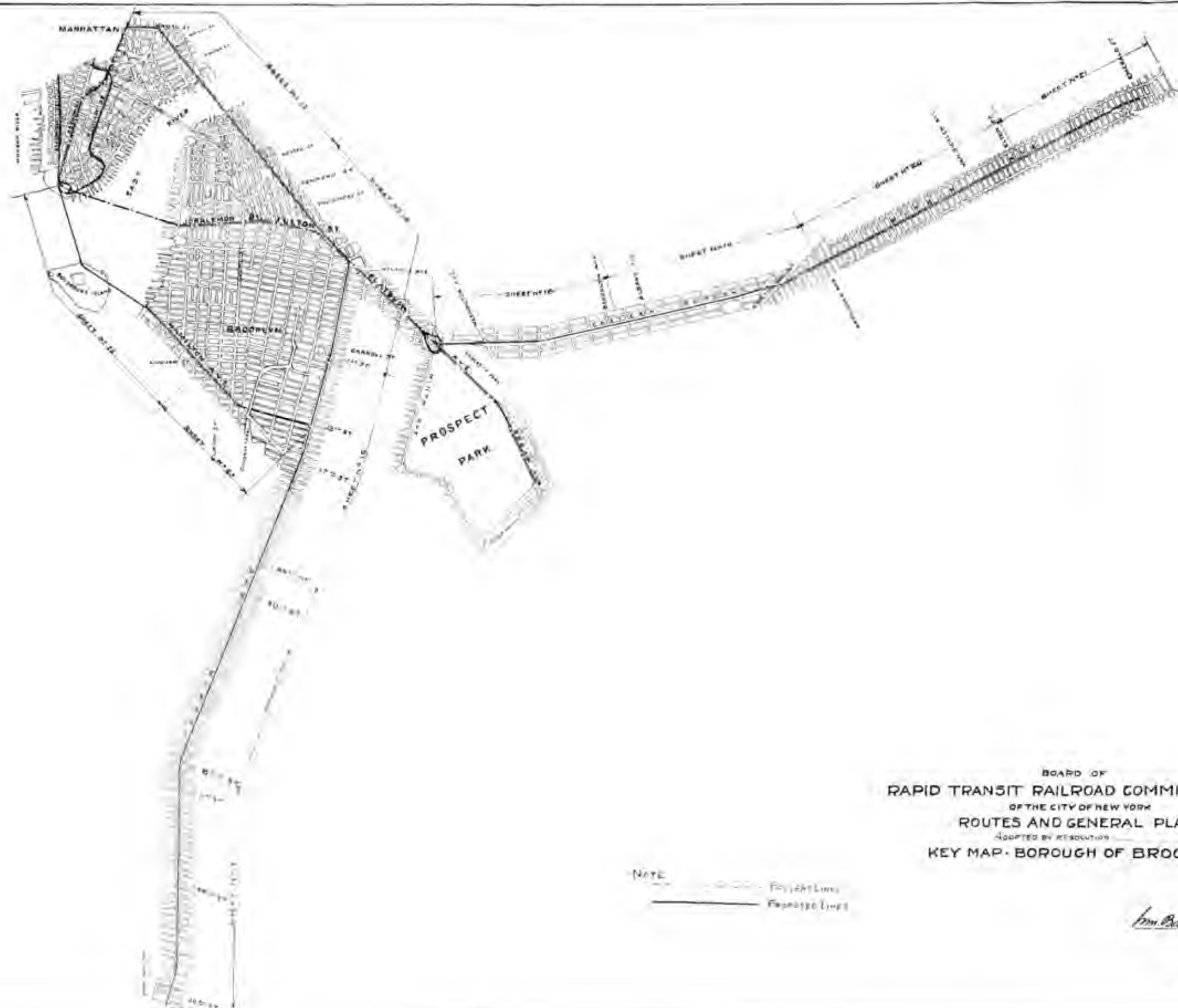
NOTE:
 ——— Present Lines
 ——— Proposed Lines

BOARD OF
 RAPID TRANSIT RAILROAD COMMISSIONERS
 OF THE CITY OF NEW YORK
 ROUTES AND GENERAL PLAN
 ADOPTED BY RESOLUTION 12, 1904
 KEY MAP - BOROUGH OF BRONX.

John B. Parsons
 CHIEF ENGINEER

SCALE 1800 FT. = 1 IN.
 Dec. 29, 1904

SHEET N° 3



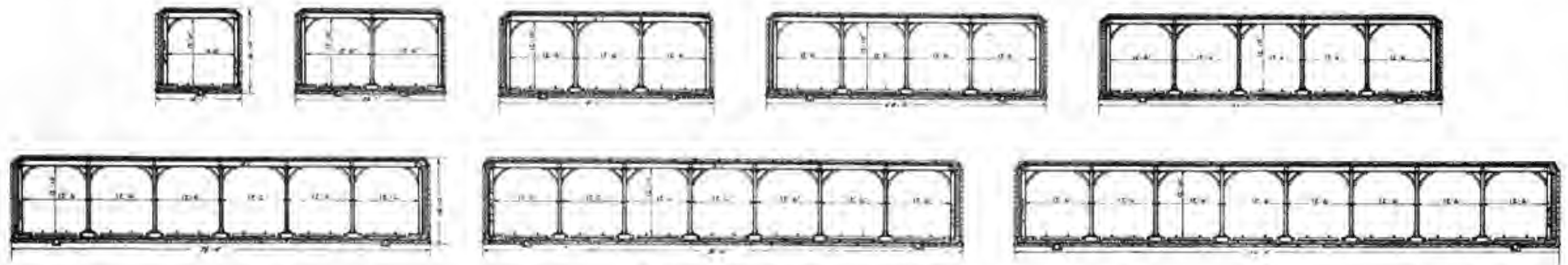
BOARD OF
RAPID TRANSIT RAILROAD COMMISSIONERS
OF THE CITY OF NEW YORK
ROUTES AND GENERAL PLAN
ADOPTED BY RESOLUTION
KEY MAP - BOROUGH OF BROOKLYN

NOTE
--- Freight Lines
— Passenger Lines

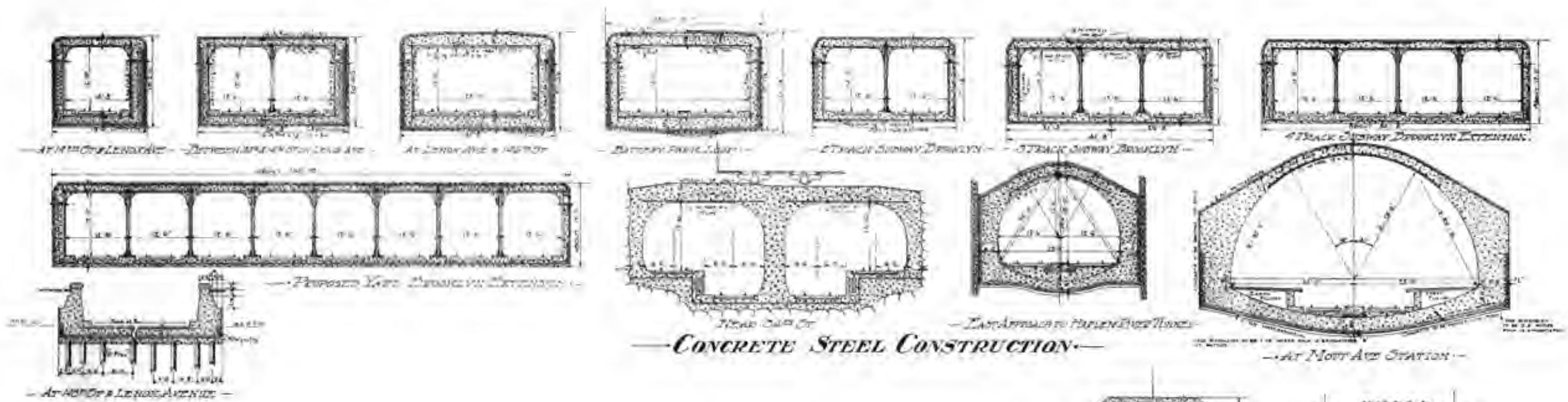
Wm. Barclay Parsons
Chief Engineer

Scale 1800 - One Inch
Sheet No. 2

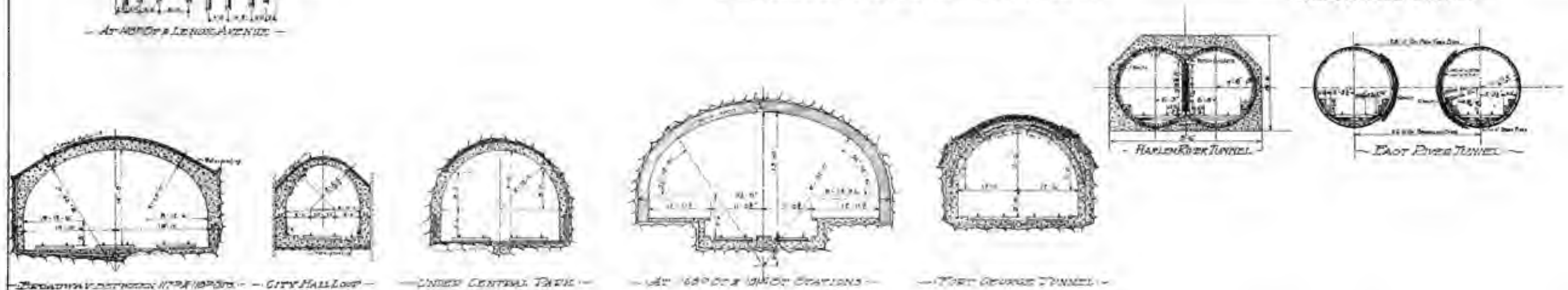
Dec. 29, 1904



— STEEL BEAM CONSTRUCTION —

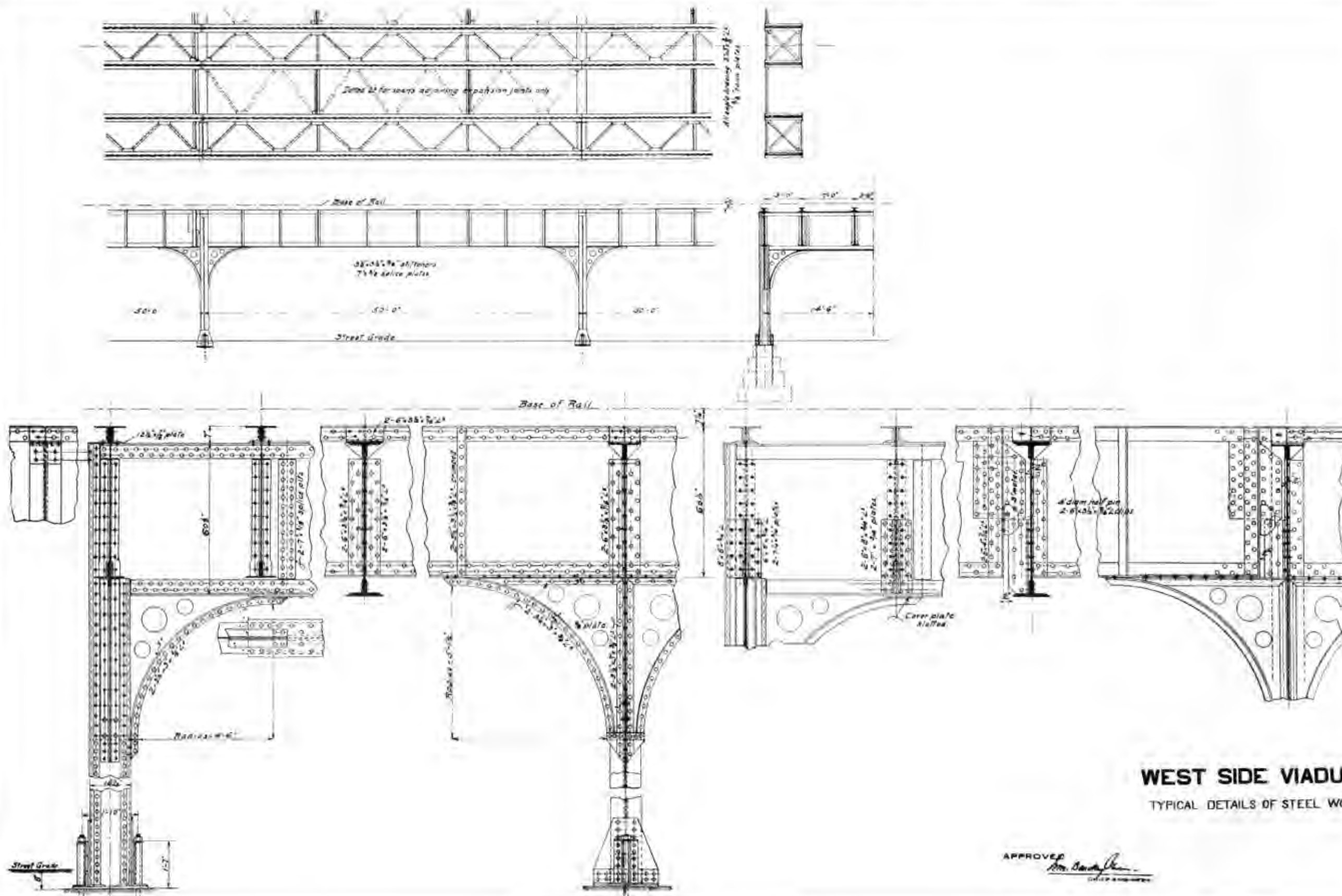


— CONCRETE STEEL CONSTRUCTION —



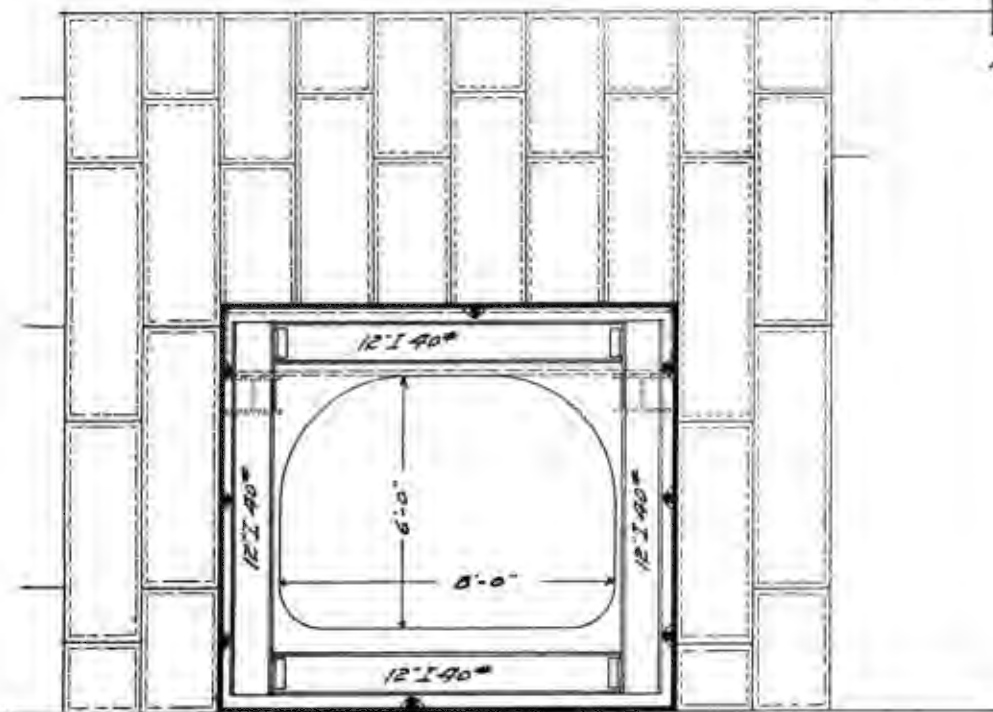
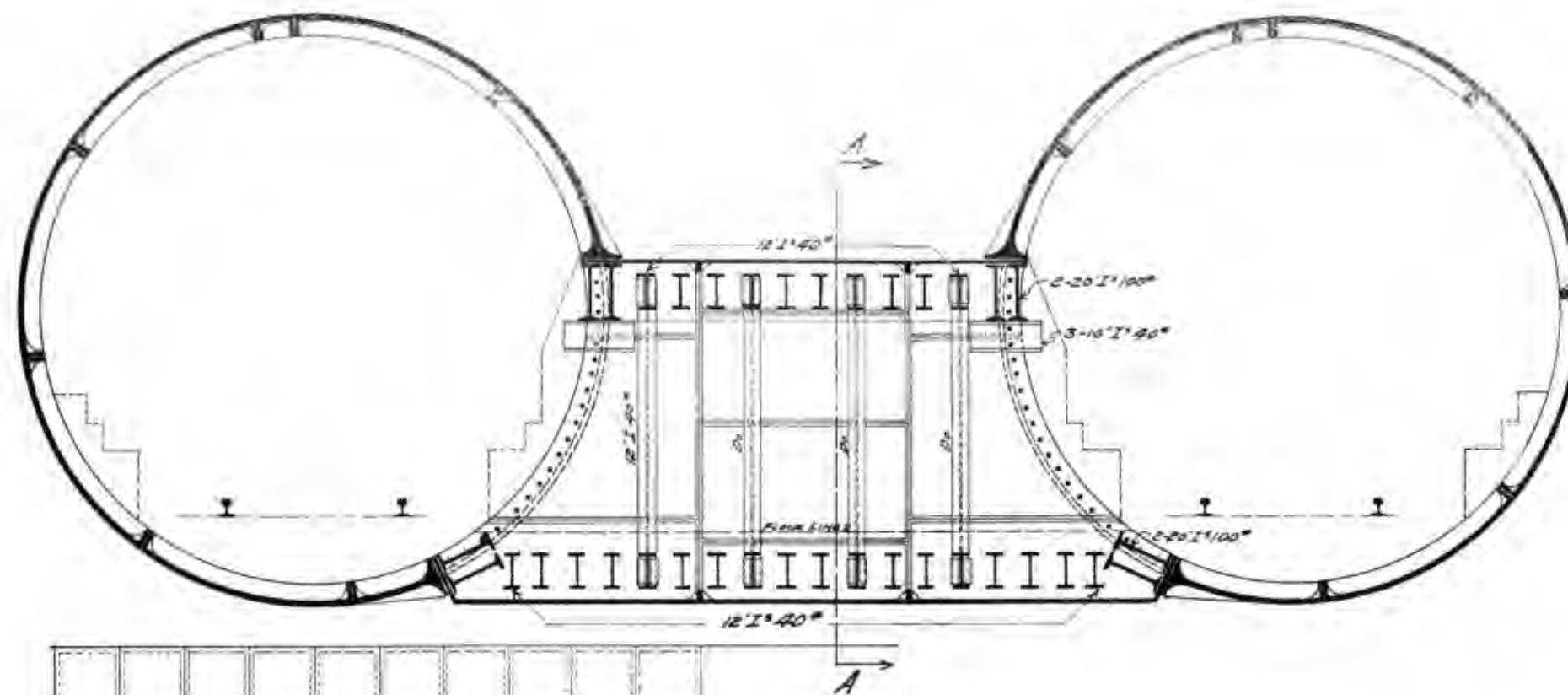
— ARCH CONSTRUCTION —

Sam B. Day, Jr.
Chief Engineer



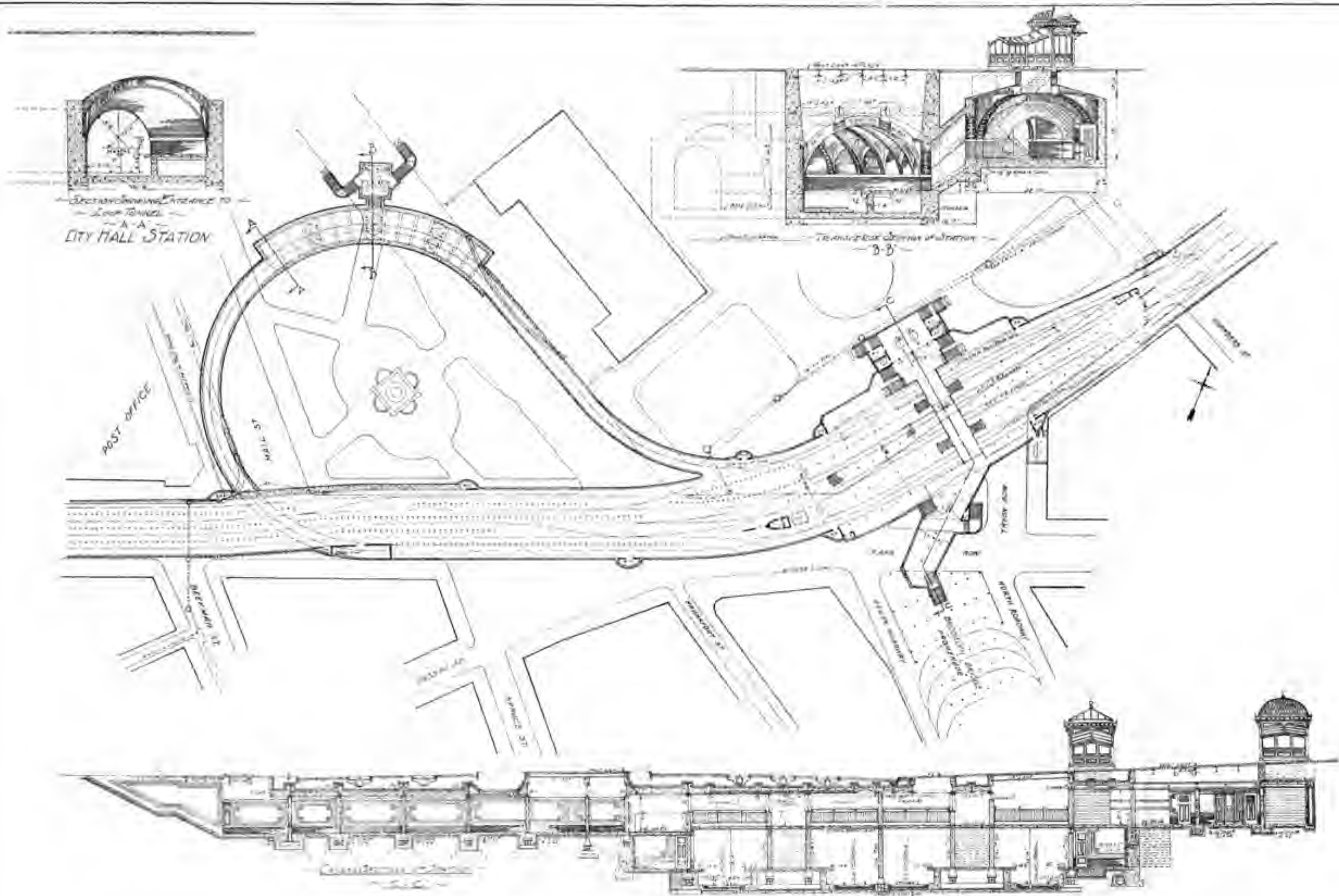
WEST SIDE VIADUCT
TYPICAL DETAILS OF STEEL WORK.

APPROVED
Wm. B. Smith
CIVIL ENGINEER



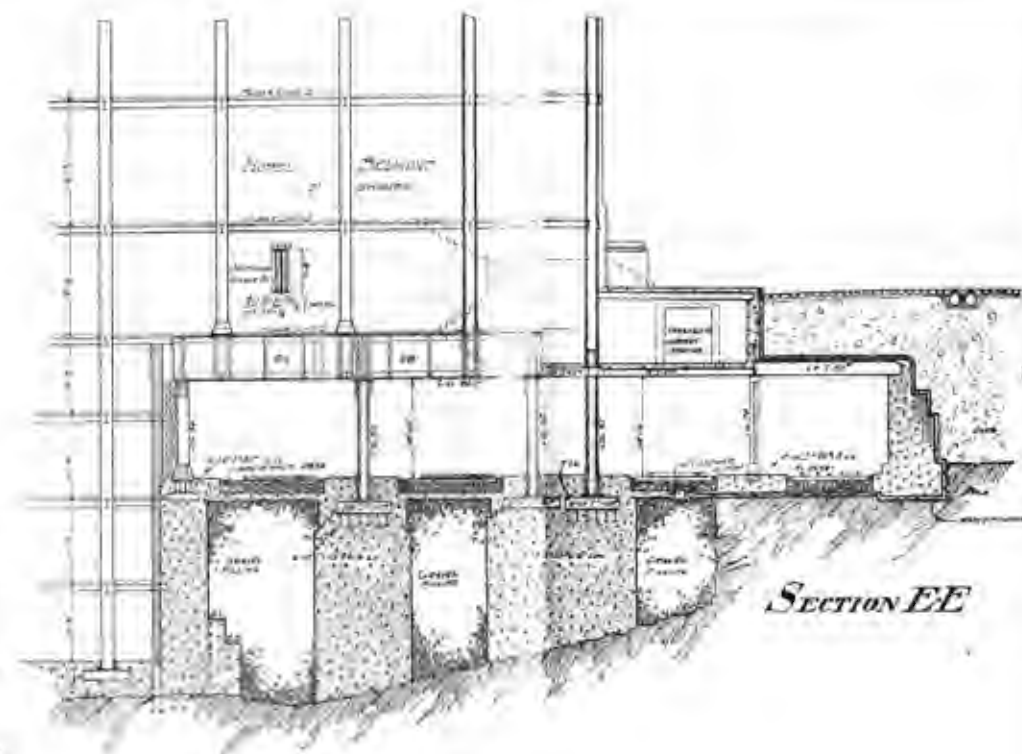
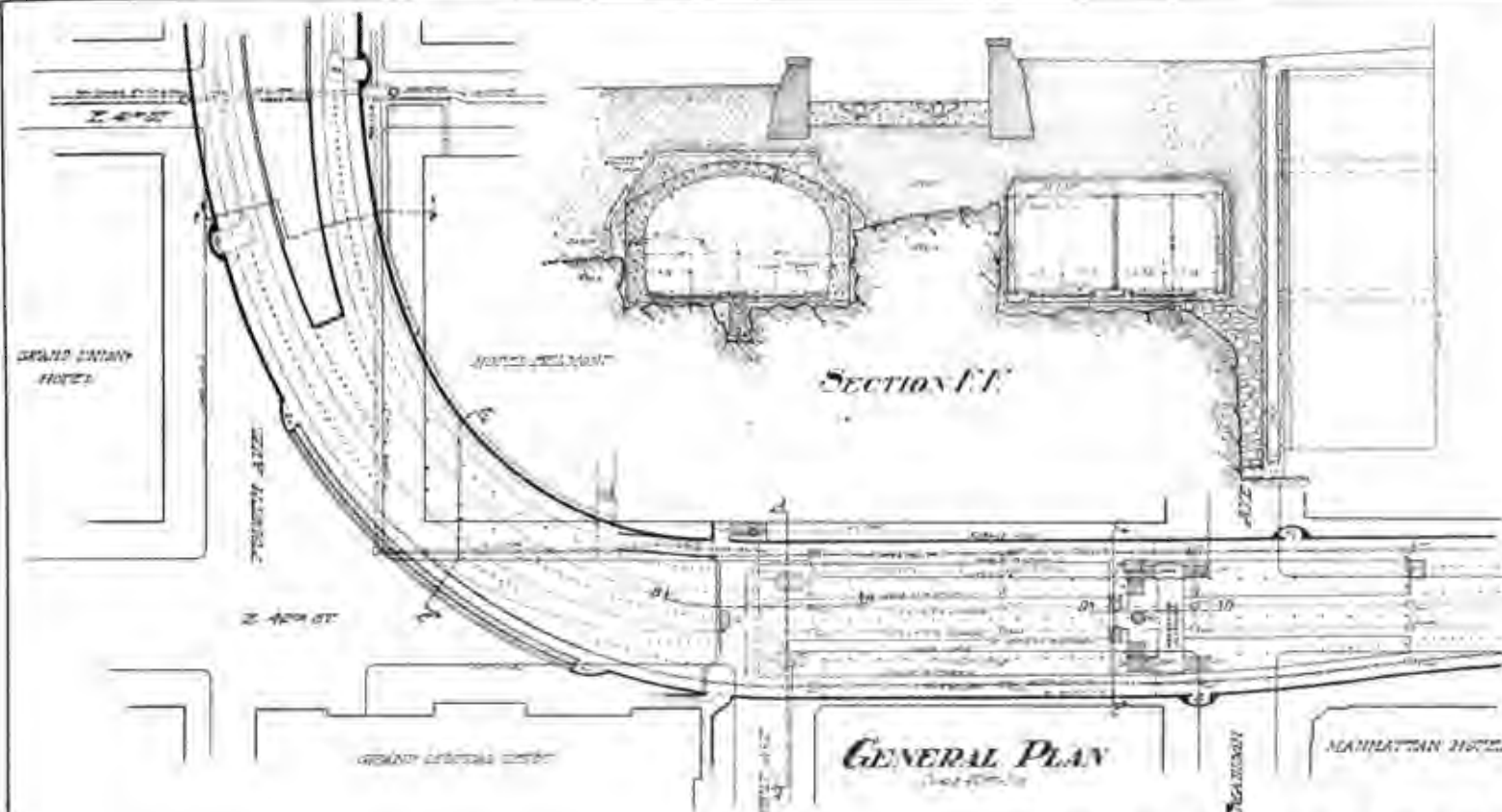
SECTION A-A

EAST RIVER TUNNEL
CONNECTION BETWEEN TUBES.

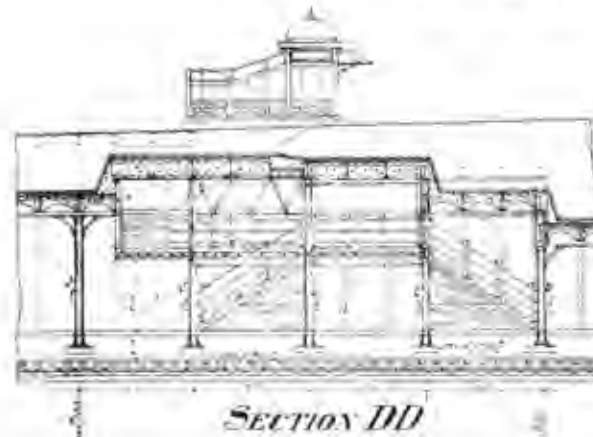
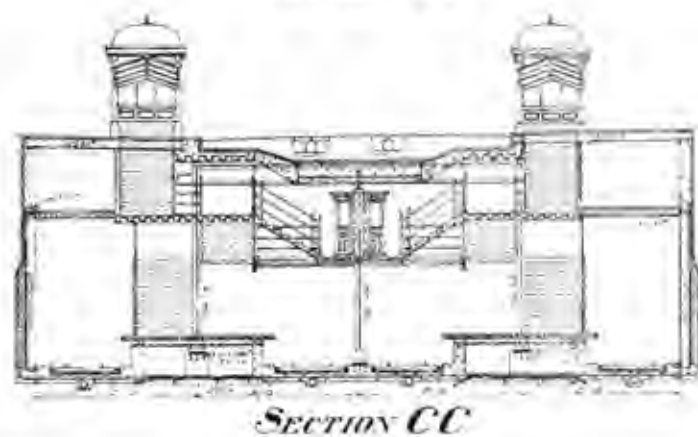
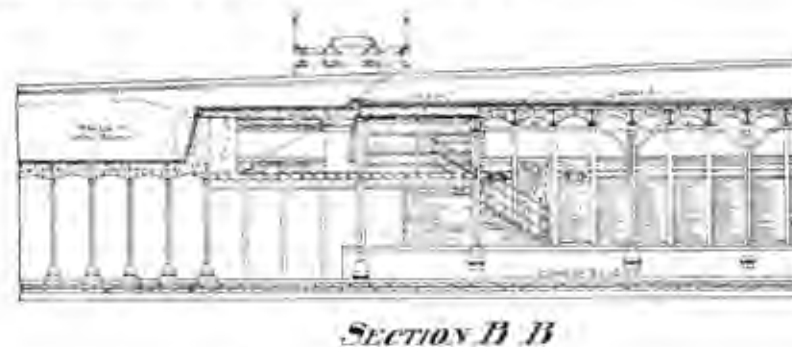
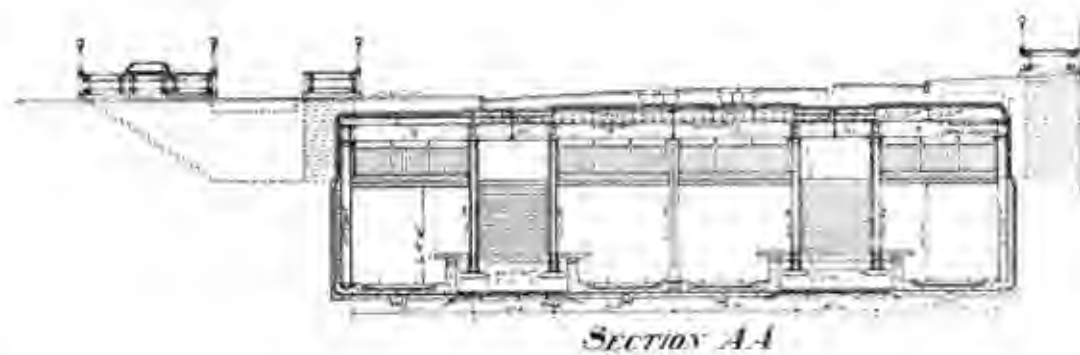


— BROOKLYN BRIDGE STATION —

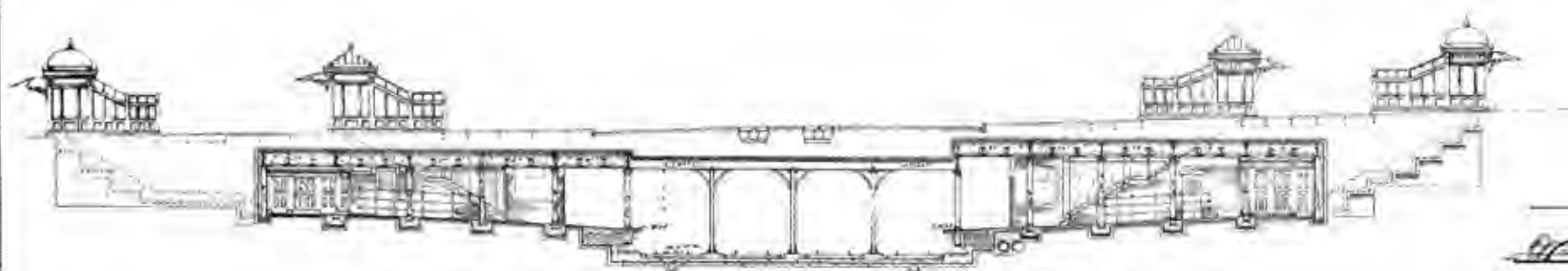
Wm. Loring Russell
Civil Engineer



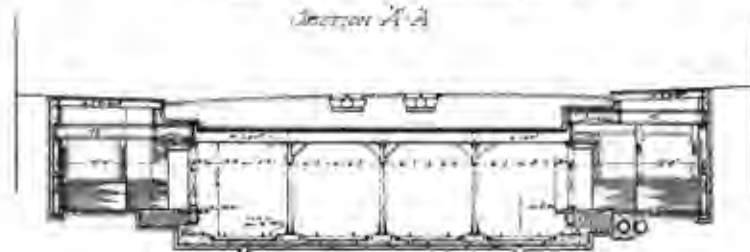
— *GRAND CENTRAL STATION* —



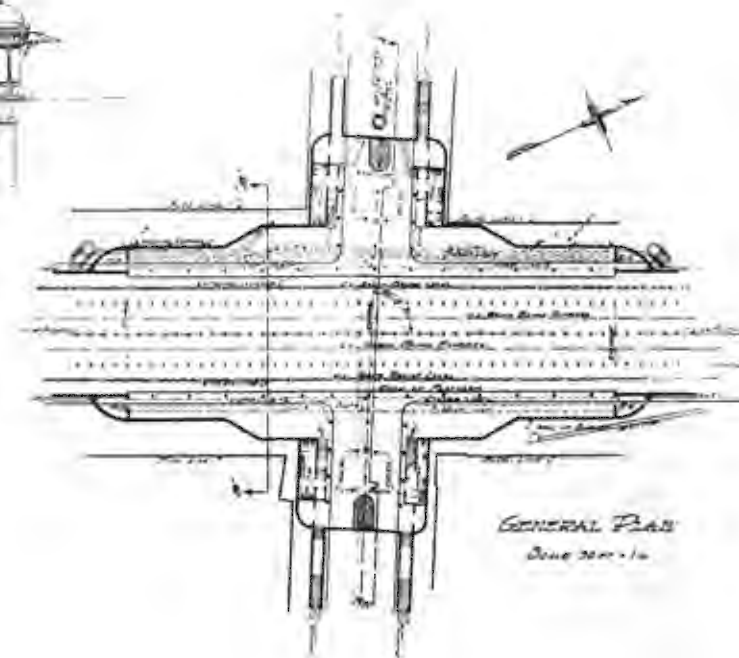
John B. Thompson
Chief Engineer



Section A-A

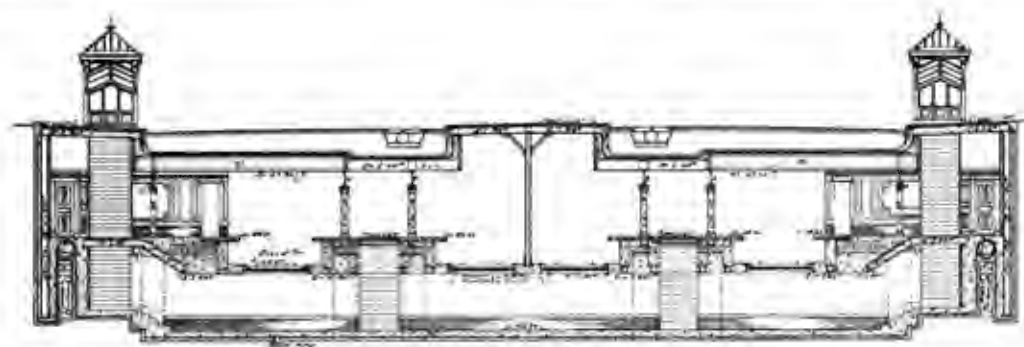


Section D-D

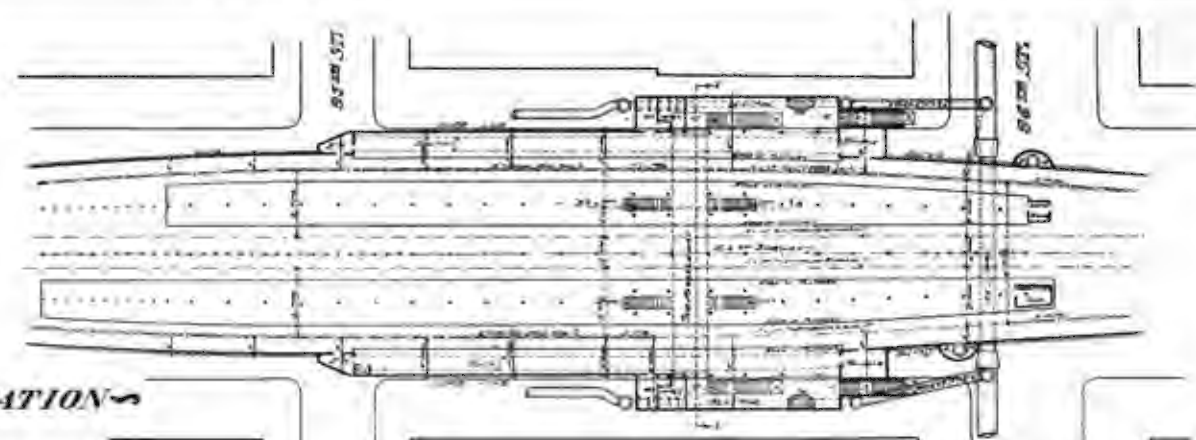


GENERAL PLAN
Scale 30' = 1"

~ 50TH STREET STATION ~

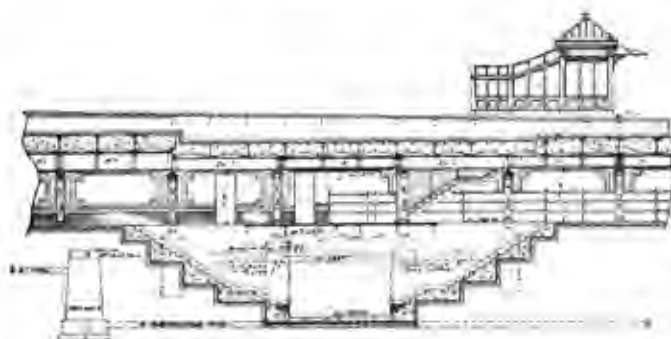


Section A-A



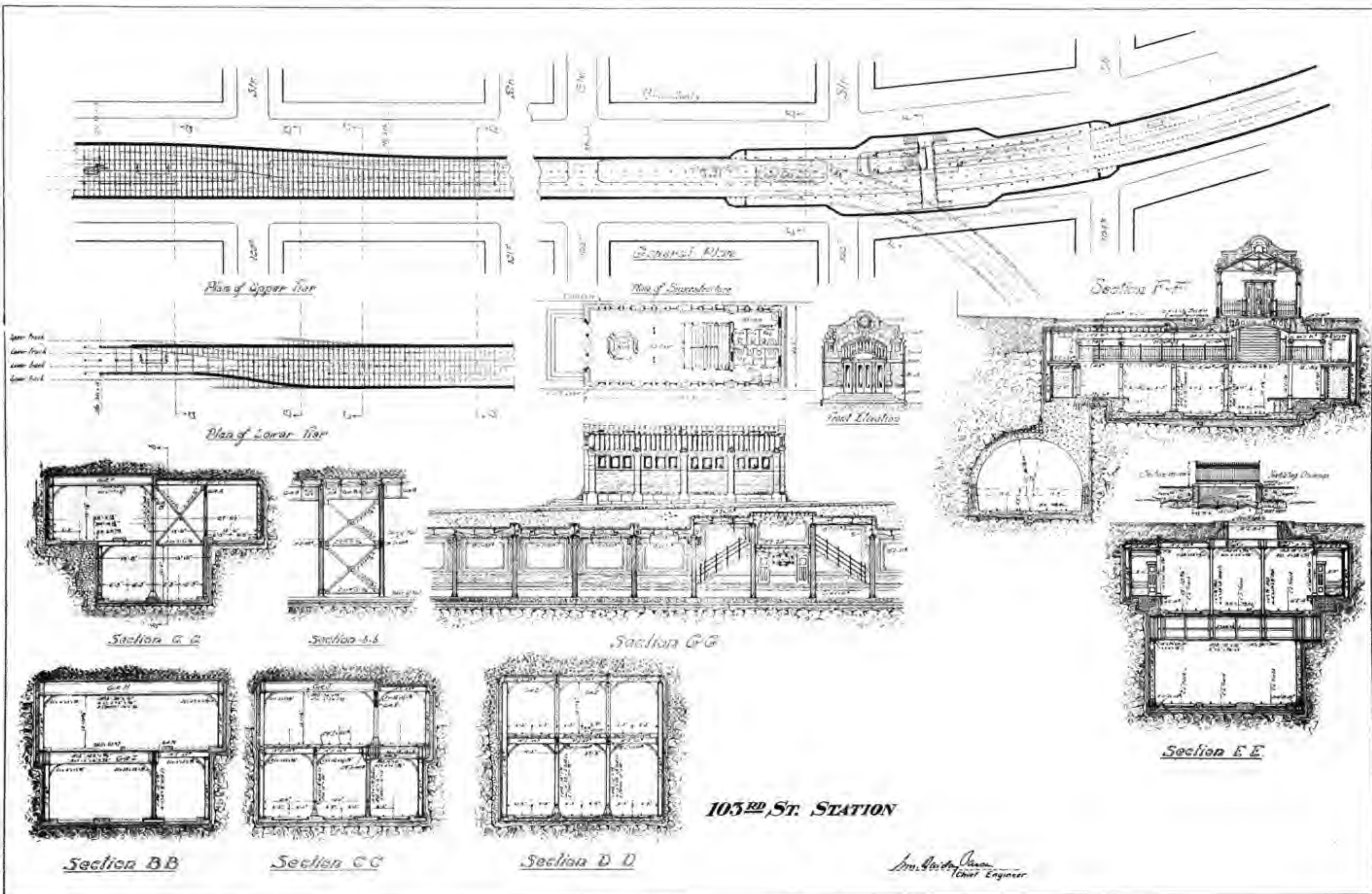
GENERAL PLAN
Scale 30' = 1"

~ 96TH ST. STATION ~



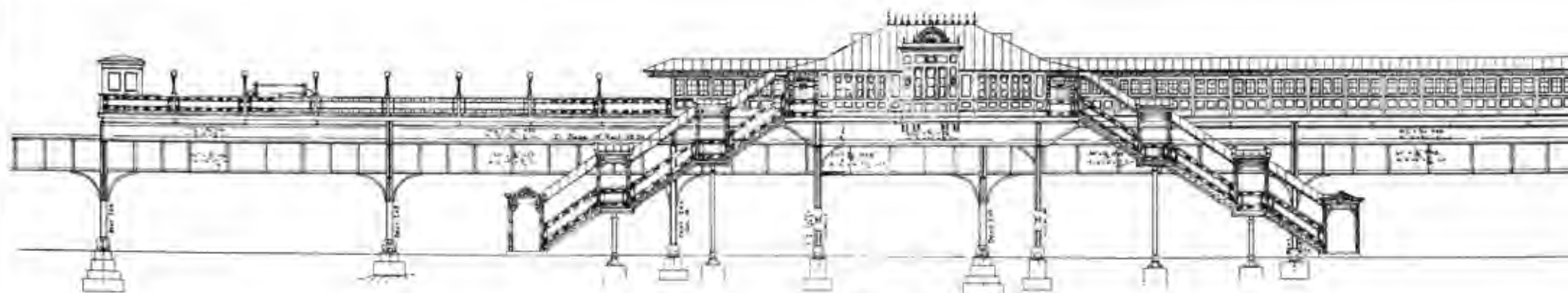
Section D-D

Wm. Barclay Parsons
Chief Engineer



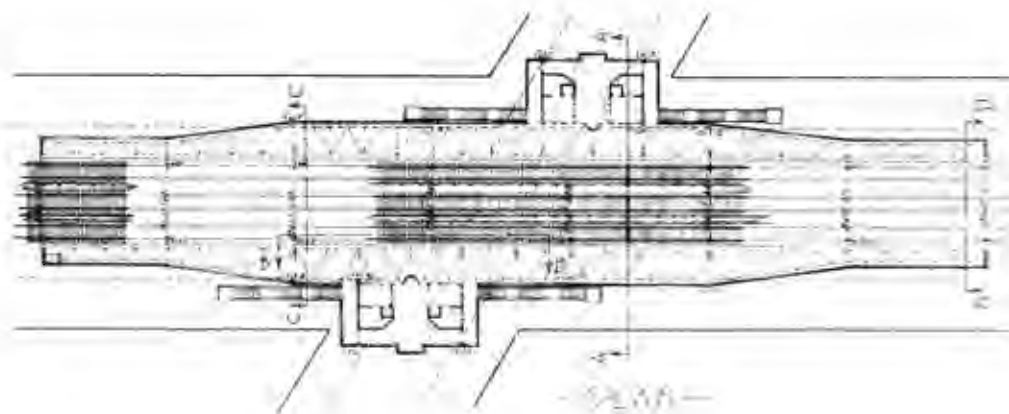
103RD ST. STATION

Mr. Gustav J. J. J.
Chief Engineer

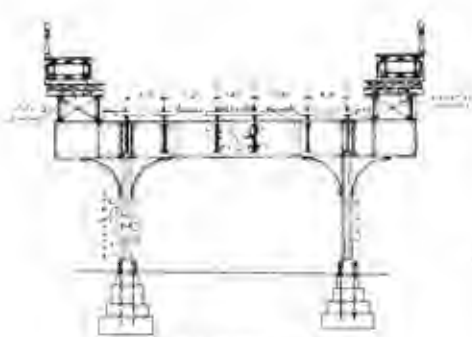


— ELEVATION —

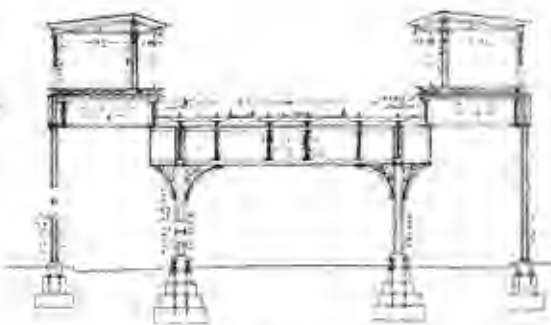
~ SIMPSON STREET STATION ~



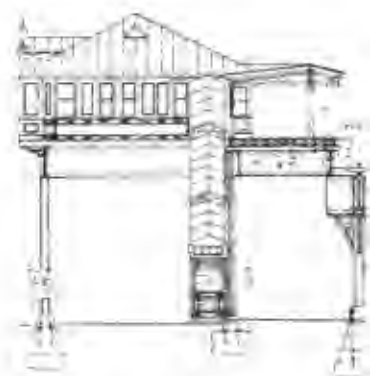
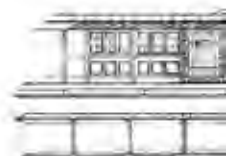
— PLAN —

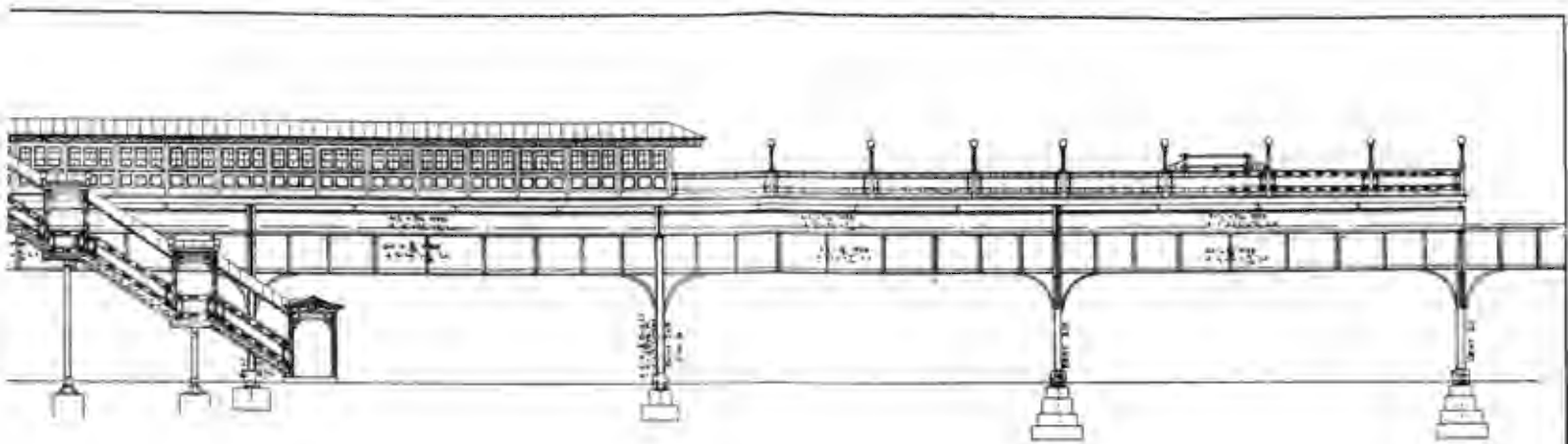


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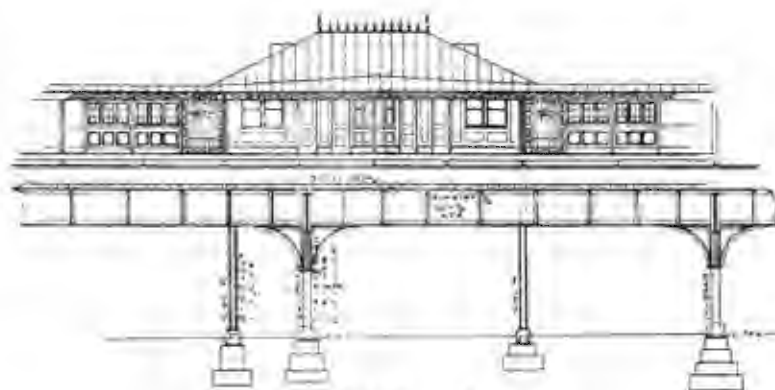


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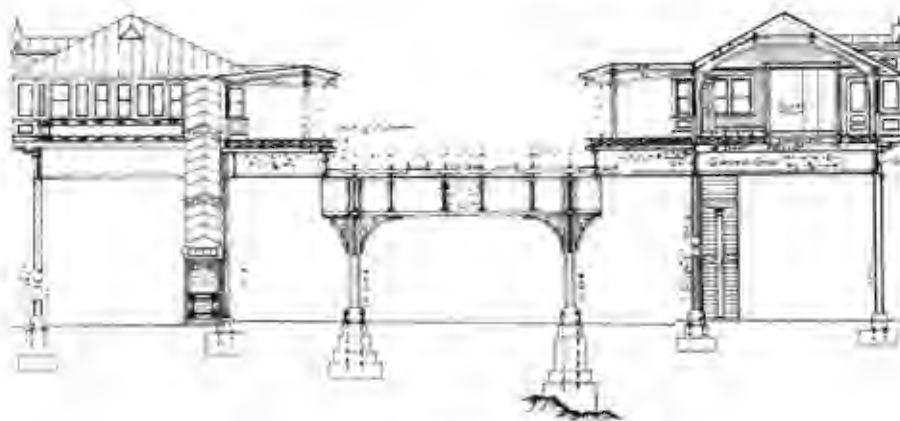




STREET STATION ~



~ SECTION D-D ~



~ SECTION A-A ~

John H. H. H. H.
Chief Engineer

